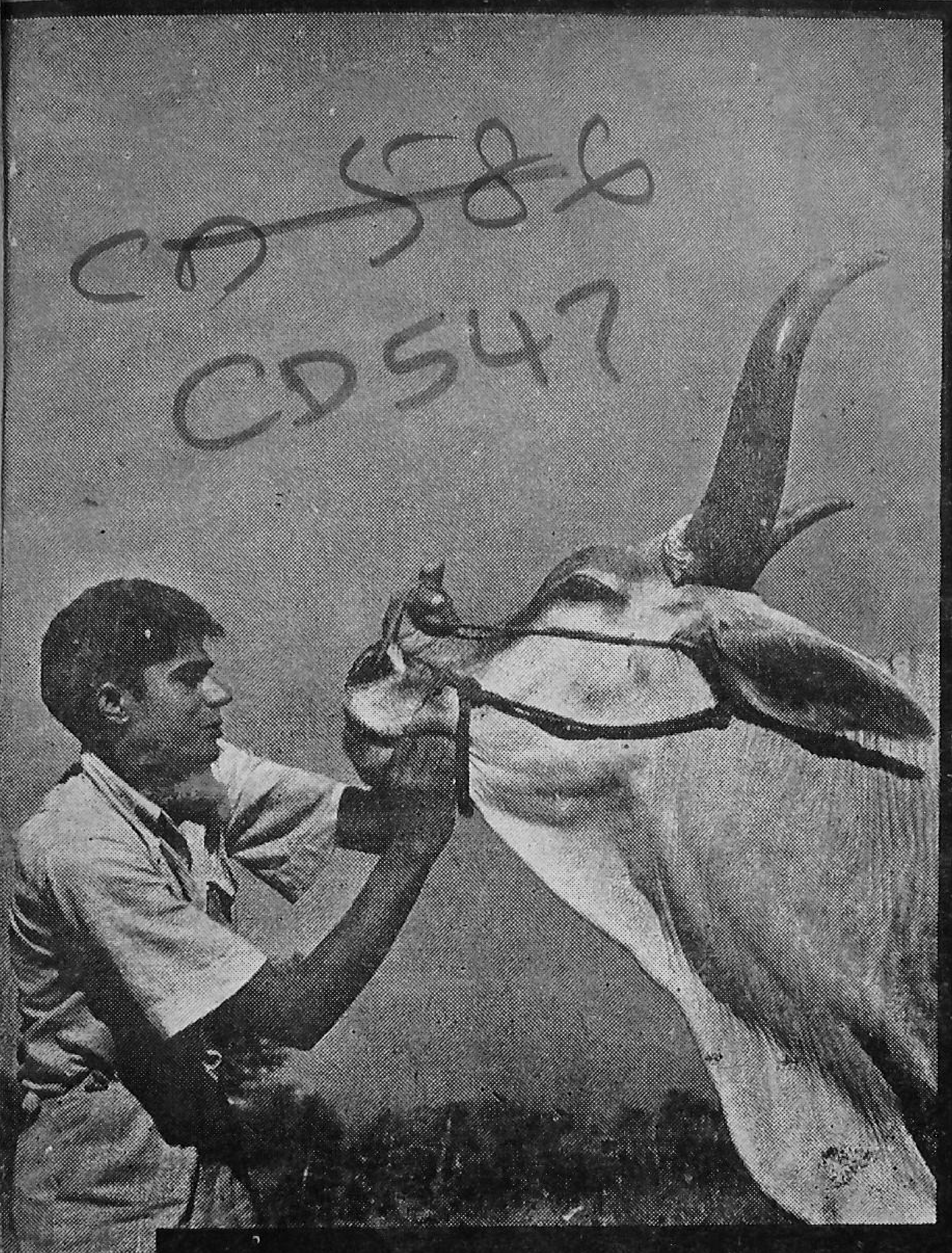
IN THIS ISSUE —

FRANK H. SHUMAN

ON

EXTENSION FOR THE PEOPLE OF INDIA



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EXTENSION

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EXTENSION

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EDITORIAL

Addressing the members of the F.A.O. Agricultural Extension Study Team, who were in Delhi in December 1957, Shri S. K. Dey, Minister for Community Development, described the whole Extension programme in India as an "Essay in Faith". The full implications of this statement have to be realised if the Extension programme is to be successful.

The need for faith in a programme such as this can hardly be overestimated. The great mass of the Indian people responded to Mahatma Gandhi because they knew he believed in them. His faith in them released great reservoirs of self-confidence and enthusiasm which swept the country and made the programme of national independence a reality. A successful Extension programme is completely impossible unless those who participate in it honestly believe in people and are convinced that there are latent powers of the human spirit to be given expression. In Extension, faith in three groups is particularly required :

(1) A faith in village people

(2) A faith in village Extension workers

(3) A faith in the whole Extension staff

Complete confidence that rural people have enormous resources within themselves

to solve their own problems is one of the fundamental principles of Extension. These principles assume that rural people who have information about alternative choices will show good judgement. They take it for granted that village people are competent to help in the planning of Extension programmes. They are based on a confidence that people can take responsibility for their own welfare and that they will do this when they realize that opportunity has arrived

The experience of Extension work in India to date indicates that this confidence in village people is justified. The **Gram Sevaks** report instance after instance in which village people have not only responded to a suggestion which they could see was in their interest, but have gone on to initiate other efforts beyond anyone's expectations. Of course, they make mistakes, as everyone does, but they know that their local Extension workers have faith in them, that they believe that they are wise, and that they will stand by them even when they have made mistakes. They respond with a readiness to take initiative and responsibility and a willingness to experiment that is as surprising as it is heartening. In former days, if a village well needed repair or cleaning, the tendency was to 'wait and see' if some agency or government service might not come along and do the job. Today, village people recognize their own responsibility and spend their own time and money in attending to the need. Farmers who have been convinced of the advantage of line-sowing, or green manuring, move rapidly on towards other improvements, often without any urging from a **Gram Sevak**. This psychological change, as the Evalution Reports issued by the Programme Evaluation Organisation of the Planning Commission have repeatedly pointed out, is the most significant achievement of the Extension Programme.

In the initial stages of the Extension Programme this faith in village people was based on the hope that they would measure up to it. Now, in the middle of the Second Plan, this faith in village people is based on the knowledge that they are capable and responsive.

A successful Extension Programme depends upon faith in village people. It equally depends upon faith in village Extension workers.

In pre-independence days developmental work was usually based on a threefold theory which seemed to hold :—

(1) that village people have to be told what to do;

(2) that they need to be told by village workers who are just a bit beyond them in education but who themselves do not have the ability or the background to help decide what the programme should be; and

(3) that these village workers must be directed by administrators and specialists who do know what village people ought to do and how village workers should present the programme to them.

This theory is mistaken on all three counts. First, it is mistaken in its great underestimation of village people.

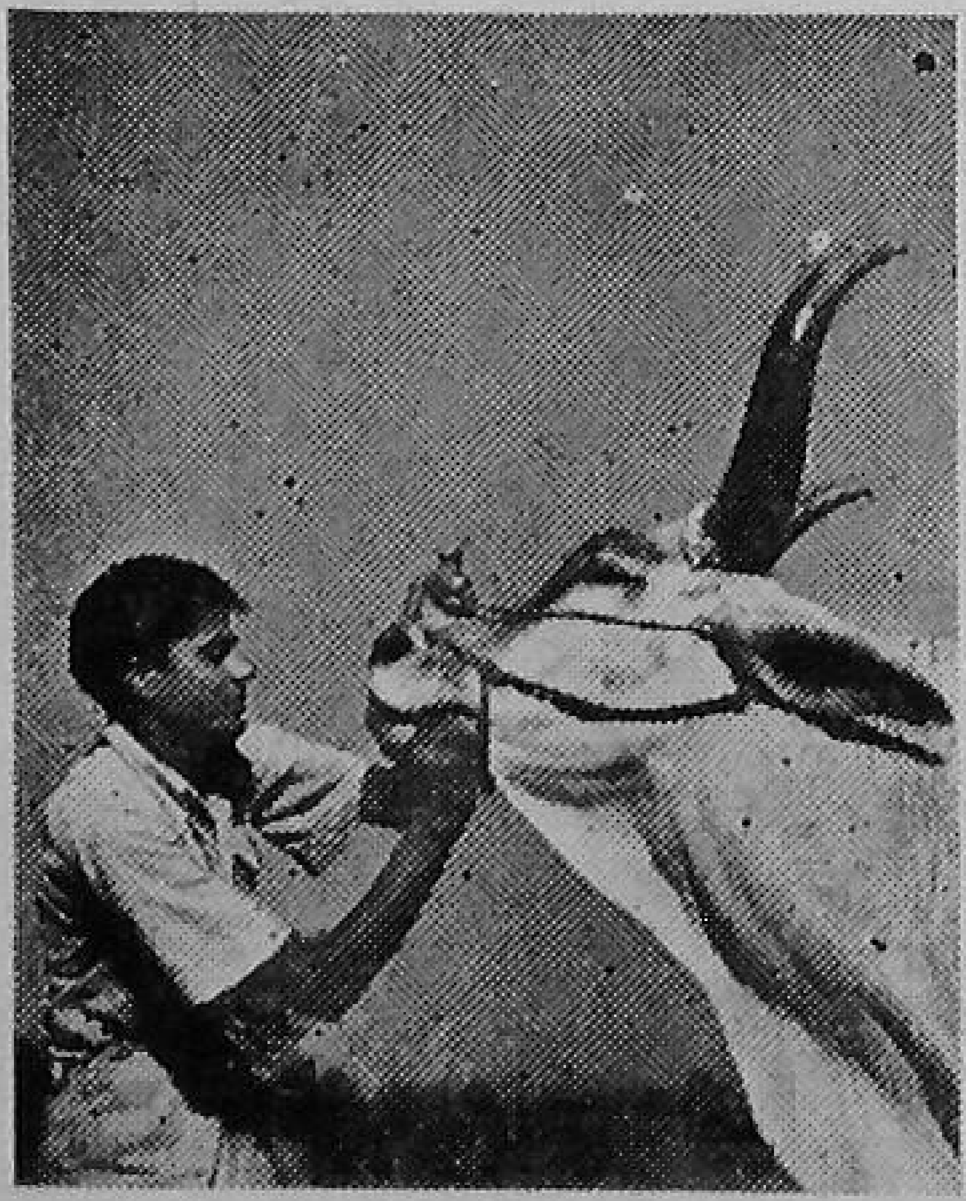
Secondly, it is mistaken about the kind of person who makes the best village worker. No amount of education and training are too much for a **Gram Sevak** although some kinds are wrong. He needs education pertinent to his special task. When this is the nature of his training, the more he knows the better, provided that he recognizes that this knowledge of his is not superior to, but

only different from, that of village people. If he recognizes that they have abilities different from his own (and that administrators have abilities different from, but not superior to his) then the broader his knowledge the better.

Thirdly, there are two fallacies in the theory that administrators should tell village workers what to do. One of these is that administrators are nearly always in a weaker position than village workers to know what ought to be done. They are inclined to be guided by a written outline more than by the logic of the emotions and experiences of the villager. The very processes by which administrators have secured more education and wider experience have often isolated them from the life and feelings of village people.

The other fallacy is the mistaken belief that village workers will accomplish more when directed than when set free to work on their own initiative. Put a good village worker under a dictatorial director and he will probably do what he is told, but no more. Set a village worker free, as the colleague of an administrator who is there not to direct him but to help him do this work—an administrator who knows his own limitations and who will stand by his village workers even when they make mistakes — and there is liberated within the project the full wisdom, energy and enthusiasm of every village worker on the staff.

While faith in village workers is of particular importance, a good Extension project also needs great faith in each other by all members of the staff, whether they do their work in the village or at headquarters. Village workers are up in the firing line, so to speak, but they are weak and ineffective unless they are backed up and served by adequate headquarters personnel. The 'subject matter specialists' providing information on the latest improved techniques, the editor of the Extension journal and pamphlets, the manager of the distribution of visual aids, the organizers of Exhibitions, **melas** and short training courses, and all other headquarters staff are equally important to the successful achievement of a project's purposes. The efficiency of the village workers depends to a great extent upon their work. So mutual confidence, and a recognition of what each member of the team contributes, are important factors in the programme.



OUR COVER

The Extension Training Conference held in 1957 at Abu recommended that next to Agriculture the subject of Animal Husbandry and Veterinary should be given major weightage in the syllabus for *Gram Sevak* trainees. The conference recommended that 15 per cent of the total teaching time should be devoted to the subject in the 18-month training programme. The picture shows a *Gram Sevak* trainee with a pedigree animal.

Photo - Gurcharan Singh

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Extension for the PEOPLE OF INDIA

By Frank H. Shuman

The author of this article, spent two years at the Allahabad Agricultural Institute under assignment from the University of Illinois, his term of service extending from January, 1952 to April, 1955.

Mr. Shuman brought with him to India a philosophy of education and a knowledge of teaching techniques gained through many years of agricultural extension work in Illinois. This article is largely an expression of his philosophy and a description of his methods as he applied them to the task of training extension workers. It includes ideas and suggestions that should be helpful to others who are embarking upon a career of agricultural extension or who are conducting a training programme similar to the one at Allahabad.

Even if I had wanted to, I could not have said no when I was offered a two-year assignment at the Allahabad Agricultural Institute. As a small boy I had often heard my father, an Illinois farmer, talk about the Institute and had seen him respond generously to its financial needs. Later, when my two sons went to war, I resolved that if ever I had an opportunity to help build a peaceful world I would do so. Now was a chance to do my part toward developing good will and understanding between nations. I knew that I had to take this opportunity—that I must go to Allahabad.

My opportunity resulted from a programme of inter-university collaboration sponsored and financed by the U. S. Technical (later International) Cooperation Administration and conducted under a contract by the University of Illionis. Under this arrangement, University specialists assisted the staff at Allahabad for two-year periods and members of the Institute staff came to study at Illinois.

Several such programmes had grown out of the U.S. Government's Point IV plan for technical assistance. This particular one, however, was established largely through the efforts of Dr. Arthur T. Mosher, an Illinois graduate and a member of the Institute staff since 1936. His association there was for me another link with the past. For his father, M. L. Mosher, had been farm adviser in my home county many years ago.

Before I went to the Institute I knew that in 1910 Sam Higgenbottom had established it by the Jamuna River on land badly scarred by erosion. When I arrived there in January 1953, I found a developed area of about 400 acres producing various horticultural and field crops and supporting a good dairy herd. Six new buildings had been designed for classrooms and administrative offices. In addition, two hostels accommodated over 300 men and there was also a small dormitory for women. The staff were comfortably housed in 25 or more residential units.

Affiliated with Allahabad University, the Institute offers degrees in agriculture and also conducts programmes in Research and Extension. In 1952, Dr. Mosher inaugurated special training courses in extension work. Nearly 400 trainees took the courses between July 1, 1952, and May 15, 1955. Over 100 of them were students enrolled at the Institute. The Indian Government selected the other trainees from the teaching staffs of the 34 Extension Training Centres scattered over the country.

Although I was assigned to India as an extension specialist, my principal work turned out to be helping with these training courses. From October 1953, until my departure in 1955, I was director of the training programme. In all my work in India, I tried to implement the extension philosophy that I had acquired as a county farm adviser in Illinois —that extension is not to go out and do things for people, but to help them help themselves. Although I was dealing directly with extension workers, it was the people in the villages of India whom I eventually wanted to reach.

The first part of my job, as I saw it, was to have "something to extend." Since my special interest was soils, I felt that I could make the greatest contribution by studying the soils and finding ways to increase their productivity. This meant studying the crops, too, to see which ones were best adapted and how they would respond to treatment.

Next I wanted to know the people. Essentially, I felt, they would be the same in India as in America. But I knew that there were also great differences in custom, tradition, and way of life.

Finally, I had to devise teaching methods that would effectively reach the people and motivate them to action.

Knowing Soils and Crops.

My introduction to India began during the three-hour automobile trip from the Banaras Airport to the Institute. The driver said that we were passing through the heart of the densely populated Gangetic Valley.

Even from a moving car the hunger signs of the crops were evident—especially the signs of nitrogen starvation. I had seen such signs in Illinois fields after only 100 years of farming. Surely it was not surprising to find them in an area which had been under cultivation for 3,000 years.

Starved crops meant half-fed sheep and cattle. Thousands of them ranged along the highway, feeding on straw, roadside weeds, and tree leaves. More important, poor yields meant that there wasn't enough food for the people.

Examining the land around the Institute, I became increasingly convinced that the soils in the area needed nitrogen more than anything else. Tests of soil samples taken from the Institute farms indicated that calcium and magnesium were abundant, and that there were also medium amounts of phosphorus and potassium, though not enough for highest yields.

Thus, the first step in my programme became evident. I would set up plots at the Institute to find out what could be done with suitable fertilizers and good practices. Although these plots were not designed as scientific experiments, they did indicate that tremendous increases in India's food and feed production are possible. As "demonstration plots", they were to become a valuable teaching tool.

For further information, I eagerly turned to the results of research being done at the Institute. Particularly helpful were research plots designed by Dr. George Dungan, University of Illinois agronomist, and G. D. Singh, manager of the Institute farm; and legume and forage experiments initiated by Professor M. H. Alexander, also from the University of Illinois.

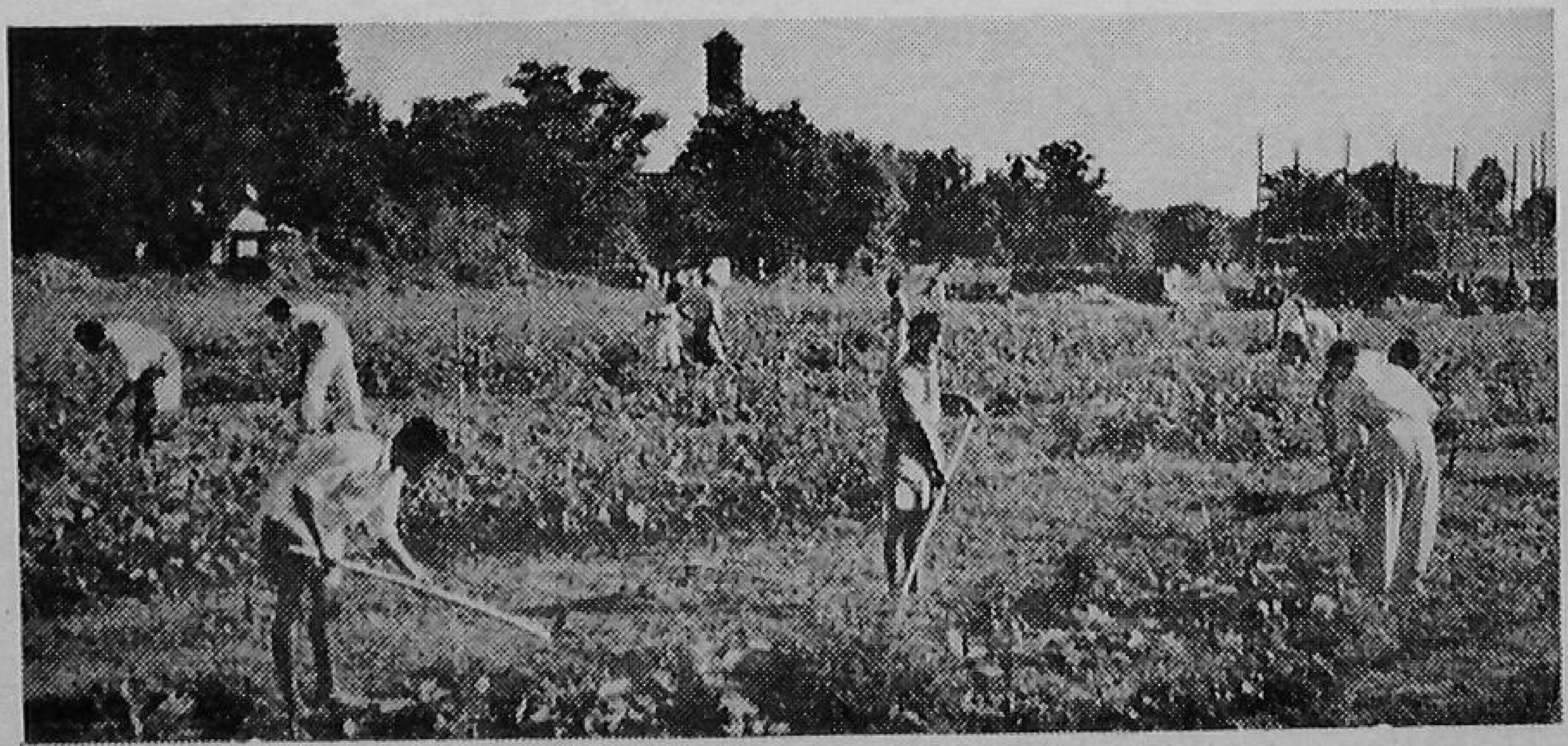
Nitrogen and weeding of maize.

Circumstances alter plans. Demonstration plots in 1953 strikingly illustrated the value of nitrogen and weed control, although that was not precisely their original purpose. Actually the plan had been to show the effects of phosphorus, potassium, and nitrogen on maize. But when Professor Alexander and I returned from visiting a hill station in June, we found that the fertilizer shipment had not arrived and that only ammonium sulphate was available.

At once we went in search of a field where potassium and phosphorus tests were high and where chemical nitrogen would give a response. But when we found the best spot, the weeds were as high as the maize, for the monsoon had come early that year. If we were to apply nitrogen to the field now, all we would measure would be the response of weeds to this element.

We soon realized, however, that we had a ready-made opportunity for a good demonstration. By hoeing out the weeds, we could show not only the response of maize to extra nitrogen, but also the effects of clean cultivation.

Trainees at work in the gardens at the Institute



Compost manure doubled the yield of wheat (*top*). An 11 maund average was boosted to 22 maunds. Turning under a crop of Sun hemp gave an average wheat yield of 30 maunds (*lower*).

Six village boys and John Velu, of the Institute staff, helped to hoe out the weeds from 64 rows in the centre of the fields. Each row was about 64 feet long, and the distance between rows averaged 27 inches.

The hoed area was divided into four equal plots, each comprising 16 rows and measuring 1/30 acre. The first plot received no additional treatment. To the second one, 40 pounds of nitrogen per acre was applied broadcast. The third plot had 80 pounds of nitrogen applied broadcast, while the fourth one had 80 pounds of nitrogen placed 3 inches deep and 4 inches from the row. This is known as side dressing. All the nitrogen was applied in the form of ammonium sulphate.

The rest of the field was weeded by village women, but only the top growth was cut off—the weeds were not eradicated.

Weeding plus nitrogen gives high yields. The part of the field which had been ploughed by oxen and weeded by village women yielded 4.7 tons of green fodder per acre. The plot that was hoed but received no nitrogen yielded 11.7 tons of fodder. This represented a 150-per cent increase. The cash value of the 7-ton increase amounted to 221 rupees.

Crows and jackals inflicted such heavy damage on the plots receiving chemical nitrogen that the fodder from these plots could not be measured accurately. However, it was possible to get a fairly good estimate by counting and harvesting the undamaged stalks and then counting the damaged or missing stalks. A yield of more than 16 tons an acre was clearly indicated for each of the two plots receiving 80 pounds of nitrogen. One rupee spent for chemical nitrogen returned five rupees in increased production. The nitrogen content of the fodder was increased by 76 per cent by hoeing out the weeds and adding 80 pounds of nitrogen.

It appeared to me that all possible sources of nitrogen should be tried in the Indian soil programme. With nitrogen the whole cycle of production would be improved. Better crops would mean better feed, better manure, and in turn better crops again.

Weed control on research plots. Maize plots under Dr. Dungan's supervision again showed the value of weeding. Unweeded plots yielded only 12.3 maunds of grain an acre (a maund is 82 pounds). Four shallow cultiva-

tions when the weeds were small, however, gave a yield of 47.3 maunds. Weeding with a *khurpi* (hand hoe)26 days after planting was much less effective, giving a yield of 19.1 maunds.

In one experiment the weight of the weeds that had been removed was compared with the weight of the crop increase. Weeding the corn meant more feed that if the weeds had been allowed to grow unchecked and used as forage. Not only did weeding increase the quantity of feed, but it also increased the quality. A good crop has more nutritional value for both human beings and animals than do weeds.

Wheat responds generously to nitrogen

That nitrogen is a sound investment was vividly illustrated by results of experiments that Dr. Dungan conducted with wheat. When applied alone and in combination with phosphorus and with potassium, nitrogen was responsible for an average yield increase of 7.4 maunds an acre. Figured at current prices, the value of this increase was three times the cost of the nitrogen. (Later it was found that phosphorus as well as nitrogen was necessary to maintain high yields).

On the side of the field nearest a termite-infested hill, the plot receiving nitrogen and phosphorus yielded 26 maunds. This was just double the yield on the check plot, where the nitrogen - and phosphorus - starved plants easily succumbed to the vicious termite attack.

Three forms of nitrogen tried. Wheat in the demonstration plots received nitrogen in three different forms: compost manure, green manure, and chemical nitrogen. Yields were greatly increased by all three forms, as shown by the accompanying illustrations.

An amazing acre of lucern

Lucern (alfalfa) seed that had been inoculated with nitrogen-fixing bacteria was planted in a demonstration plot on October 7, 1953. By June 6, seven cuttings had yielded 76,096 pounds or 928 maunds per acre. Included in this yield were 475 pounds of nitrogen.

This astonishing yield resulted from ideal soil, near-perfect temperature, maximum Sunlight, and an adequate supply of water. The land was irrigated four days before seeding and six times thereafter.

The lucern demonstration plot was probably on the best soil at the Institute. Nevertheless it showed the possibility of using a bigger acreage of the legume to build up soil fertility.

As irrigation projects are completed, lucern is destined to play a much larger role in Indian agriculture than it has in the past.

The top yield of 37.8 maunds was obtained by adding 40 pounds of chemical nitrogen

Improved varieties give top yields

Research at the Institute indicated that the wheat yield on thousands of acres in India could be doubled just by growing an improved variety. Two wheat varieties commonly grown by the villagers were compared with two new varieties. Each village variety yielded between 16 and 17 maunds per acre. The new Pusa 762 veriety yielded over 39 maunds, while Kanpur 13 yielded more than 37 maunds.

Sun hemp provides nitrogen and organic matter

Sun hemp has been called India's best legume for green manuring. Small wonder when we consider what it did for three succeeding crops at the Institute. Wheat grown after Sun hemp had been ploughed under, yielded 24.8 maunds. This was nearly double the yield of 12.6 maunds on the check plot. Bajra (pearl millet) was seeded next, and then a second crop of wheat. The bajra yield was 14 per cent higher on the green-manured plot than on the check plot, and the wheat yield was 28 per cent higher.

"Something to extend"

The amazing crop yields on the Institute farm gave me "something to extend". They convinced me that the solution to India's food problem is not more acres, but bigger acres by bigger yields.

For this I believe: India does not have to remain poor if she will combine her resources—a very responsive soil, abundant rainfall in the *kharif* season, maximum Sunlight, optimum growing temperatures, unused manpower—with an educational system that applies soil science to the land, teaches by demonstration, and motivates people to effective action.

Knowing the People

One of the first things I wanted to do in India was to gain a first-hand knowledge of village life. This was essential, I believed, if I were going to teach the trainees how to help the people.

My first chance to visit an Indian village came ten days after I arrived at the Institute. Arrangements had been made for me to stay over-night with M. Siddiqui, a village level worker in Rampur.

Soon after my arrival in Rampur, I asked to drive the oxen around the sugarcane press as an old man fed stalks into the grinder. Borrowing the club used by the villager who had been driving the oxen, I hit the oxen in precisely the same way as he had. While the villagers yelled with glee, I too yelled the only two Hindi words I knew—"Jai Hind."

Next I entered into a contest with the village athlete. He easily out-jumped me, and the villagers shouted their approval. By this time the priest had arrived as well as all the members of the *Panchayat*.

Through an interpreter six boys were selected to play the game, "I see a ghost" (quickly changed to "I see a horse" when I spotted an Arabian horse in the background). The game ended with a big surprise, the boys sprawling on the ground like tenpins. The adults, as well as the boys, shouted and laughed and clapped their hands. We all knew that communication and goodwill had been established.

Sometime later I returned to this same village to set up demonstration plots showing the effects of nitrogen on jowar (sorghum). My earlier ice-breaking trip to the village made it easy to secure the cooperation of R. Singh, the tenant farmer on whose land I wanted to establish the plots. Willingly he helped *Gaon Sathi* Siddiqui and me with the work. Together we side-dressed six rows of jowar with ammonium sulphate at the rate of 60 pounds of nitrogen per acre.

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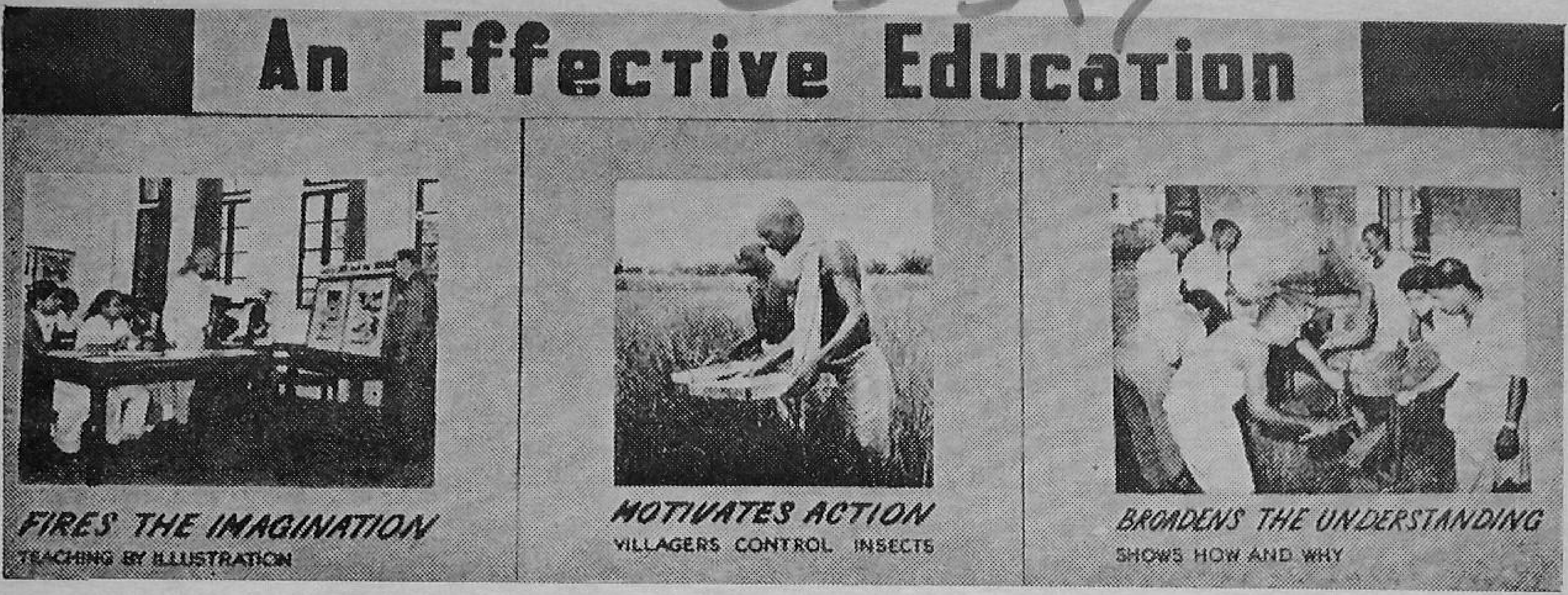


A display on the notice board

After six weeks had passed, I responded to a knock on my door to find Mr. Singh standing on the step. He had walked 12 miles to ask me to come to his village the next day and look at the plot. He said, "You will never believe what is out there unless you see it".

Of course, I went to the village to inspect the plot and to share Mr. Singh's pleasure in the beautiful response that his jowar had made to the nitrogen. Not only was he delighted with his crop, but he was equally pleased that the *Gaon Sathi* and I had taken time to come when he asked us. Naturally I was pleased too—at the success of the demonstration plot, at Mr. Singh's eager pride, and at the friendly greetings from the other villagers, who had not forgotten my visit.

On my trips to other villages, I always found this to be true, just as I had found it true in Rampur and just as I had found it true in America: An extension worker can learn to know people if he really likes them, if he tries to understand their problems, if he offers them genuine interest and encouragement, and if he shares their work and their play.

One of the most important things I brought to India with me was the concept of an effective education as outlined by Mrs. Kathryn Van Aken Burns of the University of Illinois. An effective education, she said, does three things:

1. Fires the imagination.
2. Motivates action.
3. Broadens the understanding.

To fire the imagination of students so that they would become aware of India's tremendous potential, to arouse their desire to do something about their problems, to broaden their understanding of how and why India's agriculture could be improved—these were the ultimate goals of my teaching programme. And whatever the specific aim of a lesson or the particular subject matter being taught, I always kept these goals in mind.

A variety of teaching tools was necessary both as a means to an end and as an end in itself. For I wanted not only to instruct and inspire the trainees, but also to show them ways of teaching the villagers.

To "fire the imagination", I used demonstrations and visual aids of various kinds, as well as group discussions and activities. These devices helped to stimulate the students' thinking and kindle their enthusiasm for the job ahead—the job of increasing agricultural production and improving the standard of living in rural India. They also impressed facts and figures upon the memory better than classroom lectures alone would have done. And of course they helped to achieve the other goals of motivating action and broadening the understanding.

Demonstration and research plots show what can be done.

The demonstration and research plots at the Institute turned out to be my most effective teaching device. To actually see the results of different farming practices impressed the students far more than if I had just told them the results. I hoped that, as their imaginations took fire, they could envision an India made tremendously productive through the use of fertilization, proper cropping, and improved varieties.

Every day I took groups of trainees and other visitors to see the plots. Similarly, Dr. Dungan and Mr. Singh held the attention of class after class as they pointed out the significant features of their research.

Village demonstration plots.

In addition to the plots at the Institute, I set up demonstration plots of jowar at five different villages. At each village the jowar was sowed in lines on five plots, and nitrogen in various forms was applied to four of the plots. The nitrogen carriers used were chopped lucern, fresh cow manure, and chemical nitrogen, the latter being applied at two different rates—40 pounds and 80 pounds of nitrogen per acre. The weeds were kept hoed on all five plots. Surrounding the demonstration plots was jowar grown by a century-old method—as a mixed crop with weeds being allowed to take their heavy toll of nitrogen and other plant foods.

At all the villages the jowar on the demonstration plots showed a tremendous contrast with the traditionally grown crop. Here example are the yields obtained at the village of Bara :

Treatment	Yield of jowar in maunds.
None (mixed cropping)	80
Hoed only	321
Cow manure	367
Green manure (chopped lucern)	392
Nitrogen (40 pounds)	449
Nitrogen (80 pounds)	480

At investment of $30\frac{1}{2}$ rupees in 40 pounds of chemical nitrogen gave a return of 193 rupees or about 630 per cent. The return on $61\frac{1}{2}$ rupees spent for 80 pounds of nitrogen was 273 rupees or about 450 per cent.

These plots accomplished a number of purposes. First and foremost, they helped give both villagers and extension trainees a vision of what could be done. In laying out the plots, I showed the trainees how they could lay out similar plots in their own extension work. And I gained an abundance of material for tours, bulletin boards, newspaper stories, and classroom lectures.

Drama drives home a lesson.

Having shown a class the village demonstration plots, I wanted to emphasize the principles that the trainees should follow in setting up their own plots. To do this I turned to drama, with members of the class acting out the roles.

The chief actor came hobbling into the class-room with his knee tightly bandaged. As he reclined on a bed, he explained his unfortunate predicament. "Yesterday I fell off my bicycle on the way to the Karachna

demonstration plots. I was so sorry to miss seeing them. Tell me, were they near a road ?"

"Yes, yes," chorused the class. "The first rule in arranging village demonstration plots is that they should be near a road. M. Siddiqui, the *Gaon Sathi* at Karachna, didn't miss that point."

"Was the soil uniform and well drained?" asked the disabled man.

"Of course", replied the eldest member of the group. "Uniformity of soil and a well-drained site are two important points that should never be overlooked in selecting a demonstration area".

"Did the villagers help stake out the plots, plant the seed, and apply the various fertilizers which were to be compared ?"

Another replied, "The villagers knew everything about the plots including the planting date and the amount of fertilizer added to each plot. They told about getting three oxen teams to plough the land. They were proud of having helped in the staking and all the operations."

The next two questions were combined into one. "Did the plots show contrast and did the villagers participate in the harvesting?"

Another member of the class then displayed a large print of a photograph. He said, "The big stack of jowar came from the plot receiving 80 pounds of nitrogen per acre. It weighed 74 per cent more than jowar from the check plot !"

The disabled man then concluded, "This convinces me that a picture is worth a thousand words. This shows real contrast ! There is no mistake about the villagers helping to harvest the crop. I would call the demonstration a success. Thank you for telling me all about it."

The brief silence that followed was broken by one of the members of the class. "Wouldn't it have been wonderful if Pandit Nehru or S.K. Dey, the Community Projects Administrator, could have seen the demonstration ? Let's send them both a picture. It would make them very happy to know about the demonstration method which is being used at the Institute."

The drama idea grew, with class members writing short skits to illustrate extension methods, slogans, and philosophy. Often a drama was substituted for an examination. Dramas or skits were also performed for the faculty during the evening recreational hours,

Village demonstration plots. Jowar on left was grown as a mixed crop. On the right, jowar was seeded alone and sowed in lines. Green manure was ploughed under and weeds were removed by hoeing

There's a lot of milk in this load of lucern

and for visitors to the Institute. The dramas provided fun and merriment for both participants and audience, as well as a learning experience.

"What is the weight of a cubic foot of soil ?"

In addition to the demonstration plots, I tried, whenever possible, to use simple demonstrations in the classroom. One day I showed my classes a cubic foot of cloddy, non-fertile soil weighing 82 pounds. Everyone who could guess the weight within 10 pounds was to be invited for dinner at the Shuman bungalow. One student collected on the dinner. He guessed the weight exactly.

Next I showed the students a cubic foot of fertile soil. It weighed only 60 pounds. The good soil contained an abundance of organic matter, which weighs much less than run-together clay.

Napier grass and jowar growing on the exact spots from which the two soil types had been taken were also brought to class. Tissue tests with nitrate powder were then made. The cross-section taken from the crop grown on the cloddy soil remained colourless, showing little available nitrogen. In less than one minute, however, the tissues from the plants grown on the soil high in organic matter turned a deep pink, indicating an abundance of available nitrogen.

All the students wanted the magic nitrate-testing powder. However, a field trip showed them that the hunger signs of the crops themselves were just as good an indication of available nitrogen as the magic powder.

Pictures arouse interest

Effective pictures on the bulletin board capture the eye and arouse the imagination. The above picture and caption, I hoped, would stimulate the trainees to think of a good lucern crop in terms of more milk for the children of India. In addition, I used a number of other teaching devices to emphasize both the importance of good clean milk

and the ways in which milk production could be increased.

Some topics were developed in classroom discussions—for example, the nutritional value of milk ; how to increase milk production by using good dairy rations; how to improve dairy cattle by selection, breeding, and feeding. Other points were brought out during tours that permitted students to actually see what was being discussed. Among the tours was a visit to a field of growing lucern. Here the importance of lucern in increasing milk production as well as building up soil fertility was emphasized. On other tours students saw the good condition and large size of well-fed calves; they inspected milk-production records; and they watched the pasteurization of milk and the manufacture of butter, cheese, and ice-cream at the dairy plant.

Analogy on the bulletin board

In another bulletin board display, the lucern picture shown above was combined with a picture of Taj Mahal. This analogy was another way of stimulating imagination and thought.

The morning after the Taj Mahal-lucern display appeared on the bulletin board the following points were brought out in classroom discussion : India has 360,000,000 people receiving only 70 per cent as many calories per day as they need. And every morning there are 12,000 more mouths to feed than there were the morning before. India has increased her food production in recent years, but she must produce still more and better food. She does not have time to wait !

At the end of the discussion one of the trainees exclaimed, "The Taj Mahal is breathtaking in beauty, but you can't eat or wear it"!

A big goal inspires the imagination

A good teacher, I believe, must inspire his students to think in terms of long-time goals or ideals. I wanted each trainee at the Institute to regard his work not just as a job but as part of a great movement toward improving Indian rural life. For, in my experience, people fail oftener for lack of a great goal or objective than for any other reason.

Once again I turned to analogy and the bulletin board. The comparison between the fulfilled challenge of Everest and the unfulfilled challenge of India's problems caught the trainees' imagination. Their interest in Everest was great. Not only was it close to home, but Tensing, an Indian was the only man besides Sir Edmund Hillary who reached the top.

The analogy was further developed in the classroom. Several parallels were drawn between the task of scaling Everest and the task of bettering India's rural life.

Enthusiasm. When Colonel Hunt, leader of the expedition, selected his staff, the number one requirement was that each man should really want to reach the top.

If Indian rural uplift is to succeed, everyone engaged in the task must want to achieve the goal. They must be concerned enough about the evils of poverty, illness, illiteracy, and superstition to do something about them.

Research. For months before the assault, concentrated research was carried on to select the best oxygen equipment, the strongest tents, the warmest clothing, and the food which would give the quickest and most sustaining energy.

In like manner, agricultural research is necessary if India's goal is to be reached. The rust-resistant wheat variety, the jowar growing the great tonnage, the insecticide giving the best fly-control—all these things and many others can be determined. Research seems slow, but in the end it is faster than aimless trial and error.

Demonstration. Before the first assault, Colonel Hunt had a trial run for the purpose of trying out or demonstrating the equipment,

the time needed to scale an ice cliff, the ability of the team to work together.

Similarly the results of research should be tested in the villages to find out what will work and what will not work in actual practice.

If the demonstration or trial run is successful, then the big assault, or getting new ideas adopted on a widespread scale, should be planned for and promoted.

Sharing. Eight other expeditions preceded the Hunt attempt to climb Mt. Everest. All offered to share their aerial maps as well as their other knowledge and experience with Colonel Hunt. In fact the Swiss group that had made the last attempt told Colonel Hunt exactly where to find several containers of precious oxygen and food which they had abandoned. Colonel Hunt says that but for this, the British group might not have reached the top.

The spirit of sharing was important in the assault on Everest. It is much more important in the assault on India's problem of feeding her increasing population.

Compassion. Colonel Hunt allowed a total of 13 days for reaching the top. Every hour was precious—even one wasted hour might cost the group the prize. The fourth day out, one of the men broke his leg. Colonel Hunt's immediate decision was to sacrifice one day and take him back to the camp below, even though this meant that the expedition might not reach the coveted goal. Saving the life of an individual was far more important than scaling the mountain.

So too, in India's democracy, the individual is important, and compassion is felt for the unfortunate members of society. In some types of government, the individual is sacrificed to the State. If Indian democracy is to succeed, recognition must continue to be given to the rights and welfare of every human being.

Effective Education Motivates Action

All the information in the world about better farming and living won't do the people of India any good unless they put the information into practice. Action is not only one of the ends of an effective education. It is also one of the best ways by which people learn.

Trainees take part in workshops

Workshops at the Institute gave the trainees a good chance to learn by doing. Besides gaining first hand information about crops and soils, they also acquired a technique for teaching others.

Demonstrating the need for nitrogen. Members of the workshop filled four clay pots with nitrogen-starved soil. In each they planted jowar. Nitrogen was added to three of the containers in three different forms: chopped-up legume used as a green manure, animal manure, and chemical nitrogen in the form of ammonium sulphate. The fourth container was left as a check.

Jowar gave a showy response to all three nitrogen carriers. In the container with

A parade in Mahewa village whips up enthusiasm for the fly-control project

untreated soil, however, it grew slowly, remained stunted, and turned sickly and yellow.

The four containers were exhibited at a farmers' fair or *mela*. The teachers who had made the exhibit were willing and anxious to explain every detail. Their voices had conviction, for they were explaining what they had proved for themselves.

Planning a programme of building fertility. Workshop members planted various crops in 16" x 24" x 4" flats. These flats represented actual fields as the class discussed the best crops for both the *kharif* (summer) and the *rabi* (winter) season. Seeing the growing crops helped the class to visualize them in the fields and enlivened a discussion which might otherwise have been drab and dull.

The group decided to plant gram after the paddy (rice) ; wheat after Sun hemp; barley after the combined crop of cowpeas and mung; and lucern after the jowar. Planting two of the four "fields" to legumes each season cut down the need for chemical nitrogen. The only crop that needed additions of nitrogen was the paddy crop. Cattle manure was incorporated into the soil ahead of the barley crop. The class decided to use phosphate ahead of both wheat and lucern because they had seen how these two crops had responded to phosphorus in the research plots at the Institute.

Showing that soil needs a balanced diet. Twenty grains of *gaihoon* (wheat) were planted in each of four clay pots filled with calcareous river sand. Chemical nitrogen was added to the soil in the first container, phosphorus only to the second, and potash alone to the third. All three elements were placed in the fourth container.

Healthy, mature plants grew in the soil to which the three elements had been added, but in the other three containers the plants were dwarfed and sickly. This was a convincing demonstration of the need for a balanced or complete programme of fertilization on this river sand.

A village gets rid of flies.

Mahewa village, located a short distance from the Institute, was black with flies. Old men lying on their cots were too weak to fight them off. Babies were helpless. Here was an opportunity for the Institute students to learn by doing and at the same time give needed help and information to the villagers.

Controlling the flies in Mahewa became a project for the seven students enrolled in the third year extension course. They started with a search for fly-breeding places. Thousands of flies were found hatching in human stools near the village and in six night-soil pits at the edge of the village. Hog manure at the Institute piggery was also a major breeding place.

Institute authorities agreed to haul the hog manure to the fields. The students then sprayed the piggery with water-soluble gammaxene, using 6 ounces per gallon of water. Seven days later the boys could locate only two flies at the piggery instead of the thousands that had previously swarmed there.

The students were convinced that flies could be controlled. They themselves had furnished the proof. They were ready for action.

First, they started a "warm-up campaign" to show what could be done. Calling together a group of young men from the village, the trainees showed them the fly maggots hatching in the night soil. In two evenings the students and fifteen village youths burried 60 cubic feet of the night soil. The top of the soil in each pit was dusted with gammaxene powder to kill any maggots that

Village boys do their part in the fly-control campaign by spraying the outside walls of houses

were not burried deep enough. The outside walls of the village houses were sprayed with water-soluble gammaxene. The village boys dusted the human stools in the fields over a two-week period. For a few days Mahewa was practically free of flies.

However, the problem still hadn't been solved at its source ; and to continue dusting with gammaxene indefinitely would be both costly and time-consuming. The need for bore-hole latrines was apparent. The trainees accordingly inaugurated a follow-up campaign which included the following steps :

1. A mass meeting was held in the village to explain the problem.

2. As night soil was added to the pits, villagers continued to dust it with gammaxene.

3. Young people staged a parade with anti-fly campaign banners.

4. All outside walls were sprayed, as well as most of the inner court-yards.

5. The digging of bore-hole latrines was begun.

The campaign was successful because it had been preceded by the "warm-up" programme. Both villagers and students had been convinced through demonstration that flies could be controlled in the village. They had been motivated to effective action.

Learning by doing gives satisfaction

One of the important by-products of "learning by doing" is the satisfaction that comes from being creative or producing something worth-while. People who have never before done manual work can learn to appreciate its dignity.

The third-year extension course at the Institute emphasized "learning by doing." Each of the five students enrolled at the time was given five small plots, 1/30 acre in size. Two plots were used to grow lucern with and without phosphorus. Three plots were used to grow wheat. One of these was used as a check plot, another received 40 pounds of nitrogen, and the third was treated with both nitrogen and phosphate.

It took seven hours for the boys to prepare the seedbed for the lucern, to inoculate the seed, and apply the phosphate. At the end of the day, one of the boys turned to me and said exultantly, "This is the first full day's work I have done in my life." Two other boys chorused, "Me, too."

The boys all proved willing workers and participated enthusiastically in classroom discussions. All the problems of growing and harvesting crops took on new interest for them because they were actually doing the work themselves.

Verma acts on his own

Similar to the satisfaction of the five trainees was that of Verma, who, on his own initiative, bridged the gap between knowledge and action.

He was one of a social organizers' class at the Institute. On a tour of the farm the students had been shown the hunger signs of poor crops. They had also seen the magical response of corn and jowar to nitrogen and the luxuriant green growth of healthy, well-fed plants.

The night before the class was to leave for a three weeks' vacation, Verma came to me and asked for enough chemical nitrogen for a 400 square-foot garden. Each of the other 34 members of his class had a similar-sized area in which they grew maize and vegetables. The land was so poor that the class got good physical exercise out of hoeing, but they did not have the experience of seeing the vegetables and maize produce a crop.

Verma applied the nitrogen in the early morning while his classmates slept. When they all returned from their vacation and went out to hoe the weeds, Verma insisted that I be present to see his classmates' surprise.

His vegetables had thrived. His maize stood 7 feet tall. The vegetables and maize on other plots were yellow, dried-up and sickly. As I appeared, Verma's classmates came running over to his plot. One of them called, "Verma had his imagination fired."

Verma had not only been motivated to action himself, but he had proved himself an effective extension worker.

Action — the sign of a leader

Already I have mentioned the research done by G. D. Singh, the manager of the Institute farm, and Dr. Dungan. Not only did Mr. Singh's training and enthusiasm make him a leader—but also his ability to reach a good decision and act upon it.

On June 25, 1954, when I returned from Kashmir, Mr. Singh greeted me with the news that the lucern demonstration plot had yielded 928 maunds of green feed per acre during the *rabi* season. I started to tell him that in the future I would use lucern as an annual, ploughing it under each June for the heavy nitrogen-feeding crops like jowar and corn which grow in the *kharif* season.

Mr. Singh interrupted me by saying, "Pardon me, but before you tell me what you think let me tell you what I've done. I have ploughed up the lucern and put the land into corn and jowar. If I leave the lucern during the monsoon the weeds and wet weather will greatly retard its growth. Around October each year I intend to reseed the lucern, using it as an annual even though it is usually recommended as a perennial."

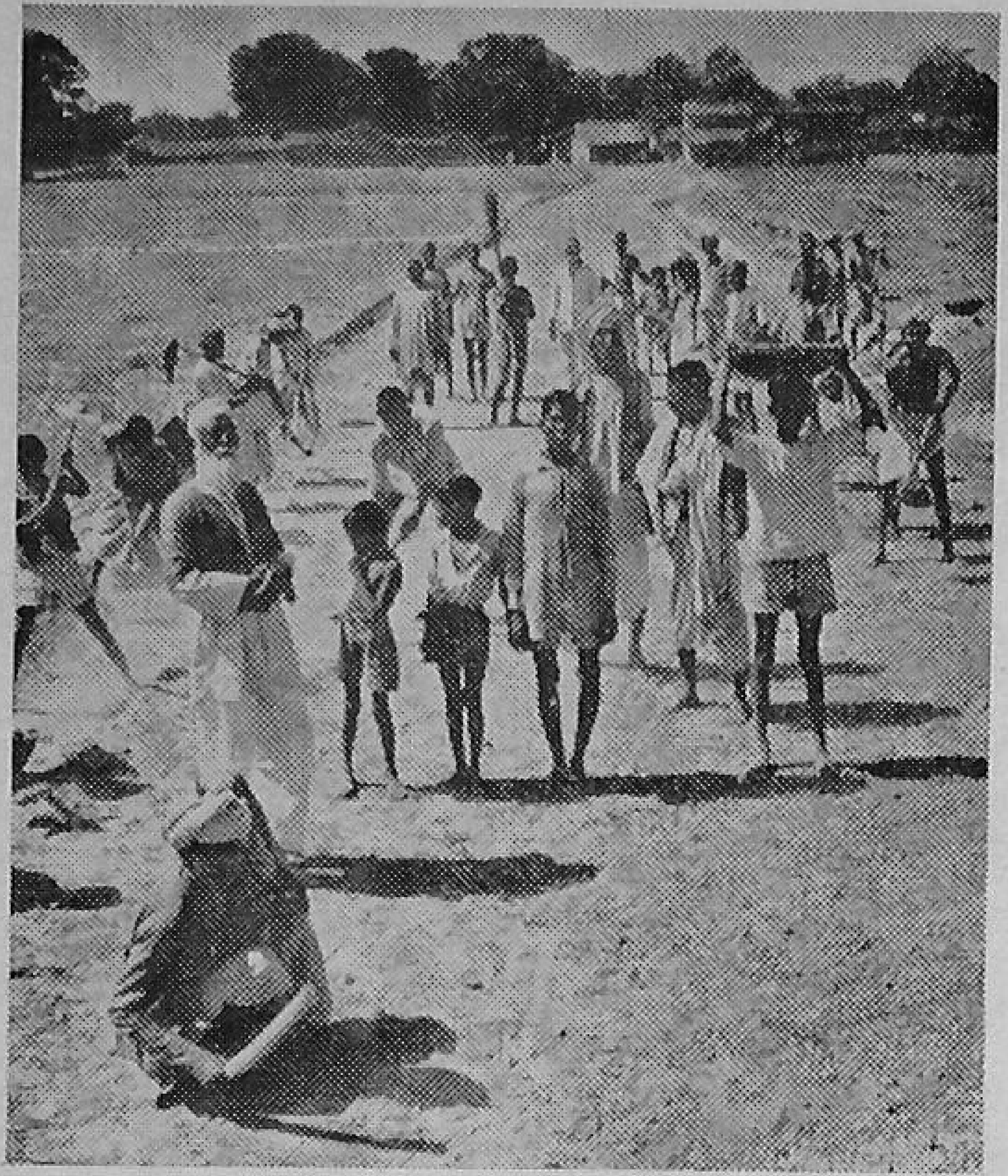
Through close observation, Mr. Singh had thought through his problem and come to a logical conclusion. He then had acted upon his decision.

There are many other leaders like G. D. Singh in India. Their talents are essential for the improvement of rural India.

United action is effective action.

The ultimate aim of good leadership, I believe is effective action by a group for the good of all. The villagers of Mahewa showed what

Villagers build their own school



They worked until the road was finished. Too often a road-building picture and accompanying ceremony come at the start of the project and due credit does not go to those whose labour has made the achievement possible

the people of a community can accomplish after a few leaders have inspired them to want a certain goal and then have shown them the way to reach it.

A similar story of united action under good leadership came from B. Prasad of Bombay State in answer to a question I had asked the extension trainees : "How would you get villagers to not only want a school but to build and finance one ?"

"I'll tell you how I did it," he replied. "I first talked to the people about a school individually and in meetings. I took the leaders to see several schools in neighbouring villages. There was more discussion and finally action. The key was taking them to see schools in other villages."

Prasad then concluded, "You have to get villagers to want what they ought to have—and then help them to get what they want".

United action promotes self-help and self-reliance

When the people of a community accomplish something through their own efforts, the reward is double: Not only do they have the material accomplishment itself, but they also have the self-respect and satisfaction that comes from knowing they achieved a goal through their own efforts.

The villagers of Beuhora joined together to build a much-needed road, two bullock carts wide. Not everybody who started, finished. Eighty-seven people worked the first day, 67 the second day, and only 37 the third day.

It was upon those who finished that the success of the road really depended. They are the ones who appear in the picture shown above which I took on the day the road was finished.

This picture was used in newspapers, in the classroom, in a filmstrip, and on a bulletin board. Always, in using it, I made the point that two invisible people had helped complete the road—Mr. Self-Help and Mr. Self-Reliance.

Effective Education Broadens Understanding

A broader understanding of one kind or another is of course the final product of all teaching, whatever technique is used. Understanding is also the basis for effective action. The success of the fly-control project at Mahewa, for example, depended on the villagers' understanding of why and how flies should be controlled. They understood because they had seen for themselves the effects of the warm-up campaign.

Similarly, the success of any other project for improving the farming methods or living standards of India will be determined by the understanding of her people. As more schools are built and more people learn to read and write, the task of reaching the people will become easier. Much has already been done. Much remains to be done.

"I have changed my mind"

That people usually understand best the things they can see was dramatically illustrated by an incident in the village of Sirsa. I was visiting the jowar demonstration plot there in early July, and was thinning the plants with the tenant. We wanted to reduce their number from 60,000 per acre to 30,000, to allow for Sunlight and adequate feeding. Suddenly I heard a slashing sound and looked up to see an old woman cutting at the plants with her *khurpi*.

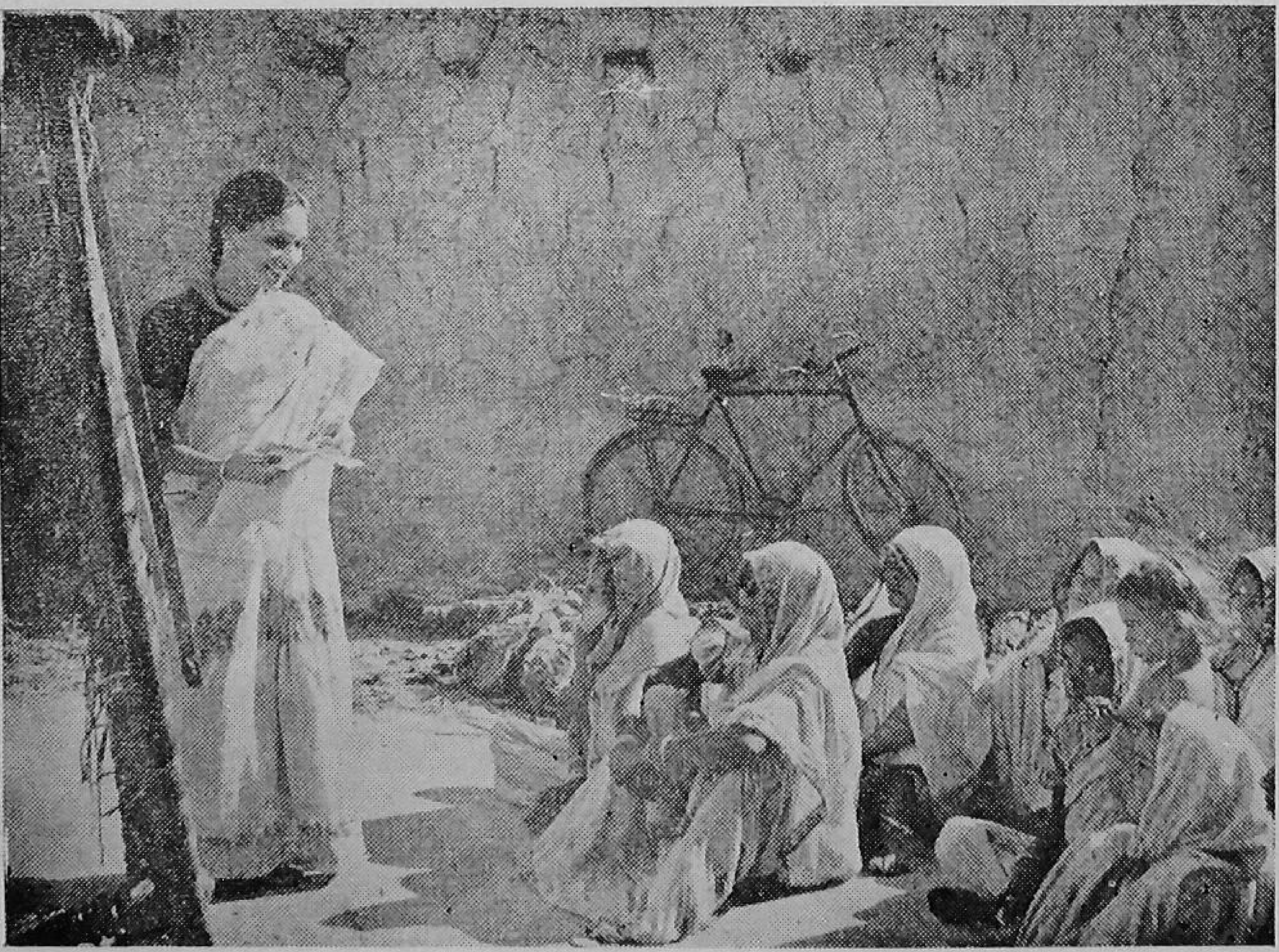
"The American is a fool" she cried angrily. "If he can take out part of the plants, why not take them all out ?"

She was the tenant's mother-in-law. As he grabbed her wrist, I explained the plant thinning by saying that if ten children were given a small bowl of rice containing only enough for two children, all would go hungry.

A week later I returned to the plot, to find the same woman standing on the ditch bank, gazing at the field. "I have changed my mind," she said, "I did not understand. The field is beautiful".

The radiant smile on her face as she spoke was to me a happy portent. For as deeper and broader understanding comes to the people of India, it is bound to cast its light on the future.

An extension worker teaches village women and girls with the aid of flannelgraphs



The Two Years Are Over

There came a day, of course, when my assignment was ended, and it was time for Mrs. Shuman and me to return to America. One of the most moving experiences of my life was the demonstration of friendship and appreciation that we received from our Indian friends on the day we left Allahabad.

About 150 students and staff members flocked to the station to see us off. In joking reminder that they had not forgotten the principles I had emphasized, they hung a huge garland of lucern around our necks and flourished banners carrying such slogans as, "To motivate, illustrate" and "An effective education fires the imagination".

Not only was the demonstration heartwarming to us personally, but the knowledge that our work had borne some fruit was the source of humble satisfaction. Looking back over the two years, I also saw my belief proved——that people, anywhere in the world, are much alike and once started in the right direction will go far beyond what their teachers have shown them.

Workshop members decided on the best rotation after growing crops in flats (*left*). At right three trainees display jowar grown with and without nitrogen. Learning by Doing helps people to remember

Indian CROP COMPETITIONS

— B. S. KADAM

The history of the Indian Crop Competitions is the story of an experimental idea which, having been born under the stress of necessity, and meeting with a number of unexpected and unforeseen difficulties in its execution, has nevertheless already produced encouraging results, which hold out the prospect of making a far-reaching impact on the whole agricultural economy of the country.

Essentially experimental in nature, the scheme can hardly be said to have attained any finality so far. At the same time, it must be admitted that the machinery devised for its execution is by no means ideal and needs constant watching and improvement. But with all its defects and drawbacks, it can be said to have opened up an encouraging and interesting vista of increasing agricultural production in an underdeveloped economy by mobilising the healthy spirit of rivalry among the progressive farmers of the country . And while the yields achieved by the Indian *Krishi Pandits*, and the production methods adopted by some of them, may or may not meet with the whole hearted approval of the scientists and the economists in many instances, in the final analysis, it must be acknowledged that they have at least shown the potentialties of the Indian soils under proper management.

As is well-known, the largest portion of the natural resources of India consists of land and by far the larger proportion of its inhabitants are engaged in the exploitation of land. In any scheme of economic development of the country, therefore, agricultural production holds a position of basic and vital importance. In 1949, with the upheavals following in the wake of the partition of the Indian subcontinent, on account of the growing needs of the population for food and raw materials, this importance of agricultural production was even more dramatically highlighted. In this year, therefore, along with several other schemes and ideas the scheme of All India Crop Competitions was launched by the Government of India with a view to increase food production by promoting a spirit of healthy rivalry among the progressive cultivators and thereby inducing them to adopt the improved techniques of farming.

There are about 600,000 villages in the country and even if only twenty competitors from every village participated in these competitions for the *kharif* and *rabi* crops with an acre plot for each competition, it was estimated that nearly 117 lakh acres of land would come under crop competitions. Further, even if each acre produced an extra minimum yield of five maunds, the total additional producion will amount to 585 lakh maunds or about 21.5 lakh tons per year.

It was obvious that these ultimate targets could hardly be achieved in a short span of

years, if at all. Nevertheless, the prospects opened by them were so encouraging and the expense involved in the whole scheme comparatively so insignificant that it was decided to give it a trial.

And to invest it with a sense of reality the immediate aim of the scheme was defined as "to bring at least twenty acres of land under competition in each village or *mandal* and to bring one lakh such villages or units under competition throughout India". This, it was estimated, would bring "20 lakh acres of land under competition per crop or 40 lakh acres in both the *kharif* and *rabi* crops". Taking a conservative estimate of increase in per acre yield as five maunds per crop, the increase in production would thus amount to 200 lakh maunds per year. It was further estimated that this annual additional production would be achieved by the investment of nothing more than Re. 1 per ton.

It must be admitted that owing to various factors not only these hopeful forecasts have not been fulfilled, but during the few years that the scheme has been under trial it has had a very chequered existence. In the year of its initiation, i. e. 1949-50, All-India Crop Competitions were held only for wheat, paddy and potatoes. Only two States participated in the competition for paddy and wheat and one for potatoes. In 1950-51, ten States competed for paddy, ten for wheat and six for potatoes. In 1951-52, three more crops, viz., jowar, bajra and gram, were added, making the total number of competition crops six and the prize money was raised to Rs. 5,000/- per crop.

The competitions this year attracted a good deal of attention and 13 States competed for paddy, 9 for wheat, 6 for potatoes, 3 for jowar, 2 for bajra and 2 for gram. But the widespread interest, which the competitions attracted, was not an unmixed blessing for it dramatically brought out one of the glaring weaknesses of the original scheme. Hitherto, the supervision of the cutting of the competitive crops and the assessment of their yield was left to the State authorities. The reported results this year indicated that there was a widespread attempt to inflate the yield figures. For example, the highest yield in paddy was reported to be 12,150 lbs per acre and for potatoes 1,000 maunds per acre. Compared even to world records these results seemed to be exaggerated. It was, therefore, obvious that unless suitable steps were taken to check inflated results and ensure correct reporting, the confidence of the public in the whole scheme would be shaken and its objectives completely nullified.

Adequate supervision was thus the clear *sine qua non* for any success of this scheme and after careful consideration, the Government of India came to the conclusion that this could not be ensured "unless the final competitions for determining the All-India prizes were confined to manageable proportions". Accordingly it was decided to introduce a system of "heats" and to treat the persons achieving the highest yields in State competitions as eligible for competing among themselves in the final competitions the following year for determining the All-India prizes.

Moreover, to ensure an adequate check on the yield results, it was decided that the District Agricultural Officer of every State would be assisted in his judgment at the time of the cutting of the competitive crops by a Central Officer as well as by a State Officer from the nearest adjoining State and that these two persons would be present in addition to whatever judging committee the State may form under their own rules. Further, in determining the All-India Prizes, it was decided that the entire plot of one acre in the case of cereals and half an acre in the case of potatoes must be harvested as there would not be any undue labour or difficulty now that the competitors for the final awards would not be very large in number. With regard to the cereals, which had to be dried before weighing, it was decided that three samples of a prescribed weight would be taken by the responsible officials present immediately after harvesting. One sample was to be retained by the State Government, the other by the cultivator and the third sent to New Delhi for drying and calculating the dry weight.

It was thus hoped that the All-India Prizes would be awarded under controlled conditions and proper official supervision would be ensured at the highest possible level and the tendency to inflate the yield results would be checked.

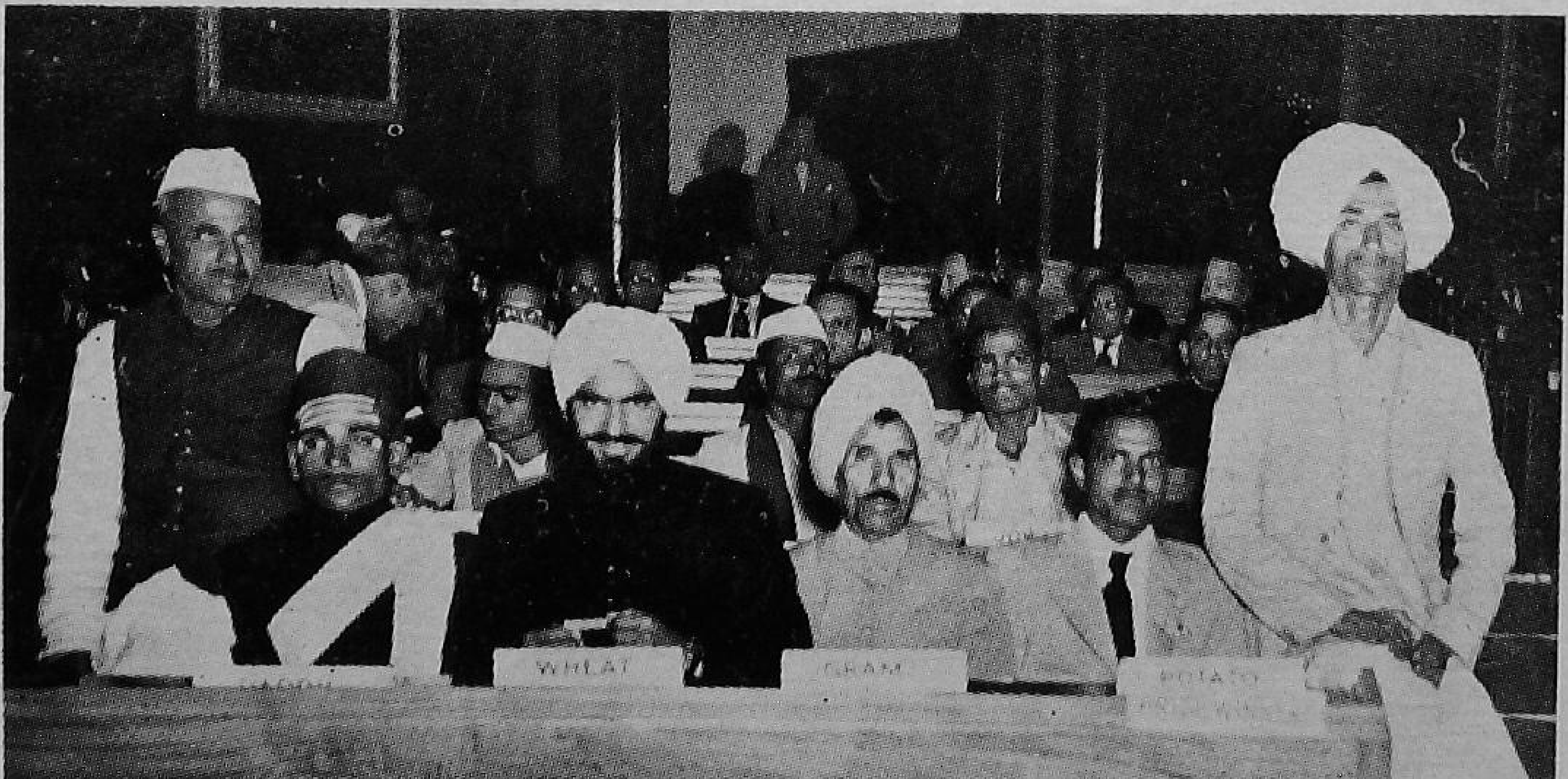
Owing to this re-organisation, no All-India awards were made during the year 1952-53. In 1953-54, after the new rules came into operation, four States participated for wheat and three for potatoes. In 1954-55, the response was much better and 11 States competed for paddy, four each for wheat and jowar and two for potatoes. In 1955-56, five States took part in the competition for paddy, six for wheat, two for potatoes, one for jowar and one for bajra. Since then no competitions have been held as the future role of the whole scheme has been under discussion.

But inspite of the difficulties inherent in the experimental nature of the scheme and the limited interest on the part of the States, the results achieved by it so far have by no means been negligible. Even at a most conservative estimate, the competitions from 1949 to 1955 have been estimated to have produced an additional production of well over 40 lakh maunds, while if the figures reported by the States are taken into accout this figure will have to be increased many times. The contribution made by the scheme towards securing additional agricultural production can perhaps best be judged by the following table:—

Year	No. of States participated	No. of enteries for competition	Area under competition in acres
1949—50	3	19,272	36,445
1950—51	15	1,03,966	1,03,539
1951—52	20	2,05,969	1,38,868
1952—53	21	1,96,781	1,59,001
1953—54	24	1,91,212	2,46,489
1954—55	13	2,73,669	1,52,265
1955—56	Complete reports have not yet been received.		

As for the cultural practices followed by the competitors, it may be broadly stated that the increased yields have been secured by the Indian *Krishi Pandits* mainly through the use of improved seeds, improved cultural practices and heavy manuring.

The Krishi Pandits of 1951–52



Some Extension Methods and the Gram Sevaks

—**D. M. Anand**

Extension methods are ways of creating interest in the village in its own problems and stimulating villagers to want to solve their own problems. In the work of a *Gram Sevak*, therefore, the importance of extension methods can hardly be overestimated. The *Gram Sevak* must know which extension methods to use, when to use them and how to use each method effectively, if he is to discharge his duties effeciently.

No one method can possibly be effective for all purposes. Usually the best village response will be evoked when a combination of methods are used. The *Gram Sevak* will, therefore, have to use many different methods of creating interest and showing the advantages of improved ways to the people among whom he is working.

Broadly speaking, extension methods can be classified under three heads:-

1. *Individual contacts*, such as personal visits, result demonstrations etc.
2. *Group contacts*, such as method demonstration meetings, lecture meetings, meetings at result demonstrations, tours, etc., and,
3. *Mass contacts*, such as bulletins, leaflets, radio, exhibits, posters, etc.

But while extension methods can be classified in this way, it must be remembered that in practice, extension work usually involves the combined use of two or more kinds of methods. For example, the personal visit in which oral communication dominates may also involve the use of written or visual materials prepared for general distribution or for use in meetings.

No one method will show completely the way a particular job is to be done. Sometimes all of them must be used to keep the village people doing the job the way it has to be done. The wise *Gram Sevak* will see and use as many ways as are needed. The more ways used, the more people will try the new practice and it is essential, therefore, that the *Gram Sevak* should know about the various extension methods and become skilled in their use.

In particular, he should know how to put over a demonstration. For showing "how to do it well and easily" is very important. The *Gram Sevak*, therefore, must know how to do the job very well before he tries it in the village. He must try it alone many times. Only then he will be ready to show others.

The *Gram Sevak* may show *how* to cut fodder, *how* to plough a field, *how* to make a garment, *how* to wash a baby's eyes. Then he may ask the village people to do it just as they saw it done. This is called a *method demonstration*. When the *Gram Sevak* shows how to cut fodder, he will take the villagers to the field of fodder. He will show his new sickle. He will show how to cut down the fodder. He will then talk again about

the sickle and let the villagers use it. This is one *method demonstration.* Village people can also do method demonstrations for others.

To show how to wash the baby's sore eyes, the *Gram Sevak* will measure and heat water over the fire, put in boric-acid crystals. He will let the mixture cool. He will show how to put it on the baby's eyes, and talk about keeping them clean. The villagers will do all this also. This is another *method demonstration.*

The village people will *see,hear, talk about* and *do* the job. The *Gram Sevak* must, therefore, plan the demonstration so that all can see, can hear well, and can do the job demonstrated. He will use only those things which village people have or can get. He will take each step carefully, one thing at a time. He must say them over again many times. The *Gram Sevak* must talk like a friend; he must answer all questions like a friend. He will not argue, he will *show how* a thing is to be done easily and well.

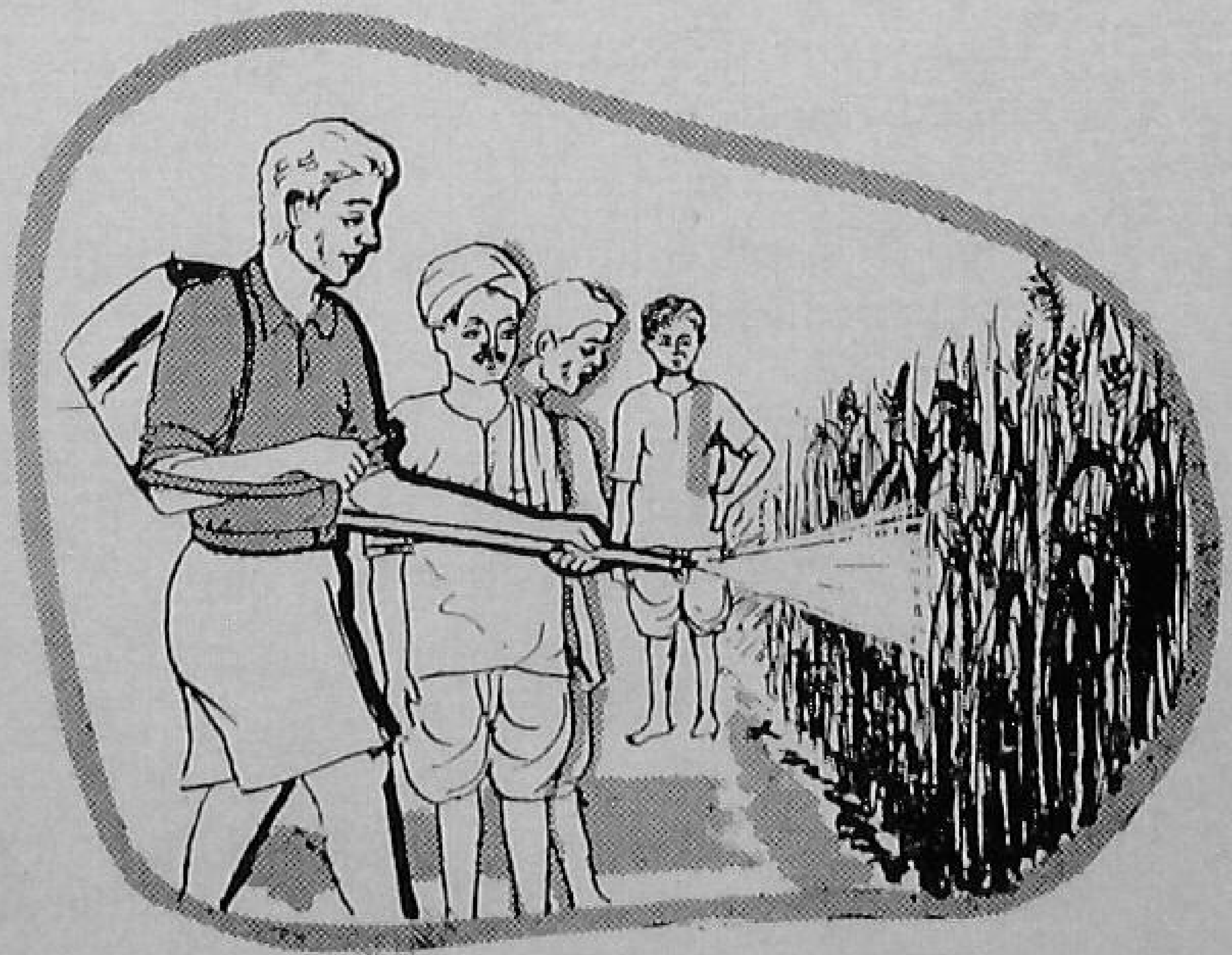
The wise extension worker will teach people how to do things by showing them *how*, and then helping them do the things they have been shown. This is the proper use of the *method demonstration.*

When properly used, the method demonstration has the following strong points in its favour:—

1. The method demonstration teaches skills effectively.
2. The method demonstration motivates and stimulates action, because seeing, hearing, discussing, and doing are employed together.
3. The method demonstration builds confidence in the villager.
4. The method demonstration promotes personal acquaintances between the village worker and the village people.
5. The method demonstration serves as a news-creating agency and, therefore, stimulates publicity.
6. The method demonstration yields high rates of "acceptances" to "efforts".
7. The method demonstration accomplishes changes in practices at low cost.

The method demonstration also has the following limitations:—

1. The method demonstration is not adapted to all subject matter.
2. The method demonstration will have little teaching value if actual work and illustrative material are not seen well.
3. To be effective the method demonstration requires a good deal of preliminary preparation.
4. The method demonstration necessitates considerable skill on the part of the demonstrator.
5. The method demonstration involves slightly greater expense than do general meetings.



To guide the *Gram Sevak* in deciding when and how to use method demonstrations, the following suggestions may be helpful :-

1. Select topics related to needs and interests of the village.
2. Select a subject which lends itself to demonstrating.
3. Present demonstration when subject matter is timely.
4. Select place providing suitable facilities for the demonstration.
5. Publicize demonstration in advance to get as many people as possible to the demonstration.
6. Be thoroughly familiar with subject matter being demonstrated.
7. Plan demonstration so that action, explanation, and use of equipment reinforce the central idea.
8. Talk directly to the audience in a friendly, conversational manner. Avoid argument and over-aggressiveness.
9. Use appropriate demonstration materials which can be easily and clearly seen by all.
10. Use equipment that farm people have or can easily obtain.
11. Present topic step by step in a logical sequence, explaining one thing at a time.
12. Show appreciation for methods already being used by group.
13. Summarise carefully.
14. Distribute interesting supplementary literature.

Sometimes it will take a long time to show the results of a practice. Using compost on a field will not show its value for some time. Result of using a green manure crop will not be seen for several months, may be only at harvest time. Effects of spraying against mosquitoes and flies, so that village people will not have malaria, cholera and dysentery, cannot be seen for months. The results of changes seen after a time are called *result demonstration.*

The "*result demonstratian*" is the basic corner-stone and, therefore, one of the most important methods of Extension work. It provides people in the village an opportunity to see for themselves what a new method or way of doing something can mean to the villagers. For example, when a new variety of wheat is developed, the *Gram Sevak* must work closely with the village cultivators in determining if it is adapted to local conditions . In one strip the cultivator may plant the new variety, next to it he may plant the old variety. The cultivator and his neighbours will then have an opportunity of judging if the new variety is superior. If it is, they will want to purchase the seed of the new variety and sow it themselves the next year. This knowledge and interest in the new variety will quickly enter into the thinking and discussion of the whole village.

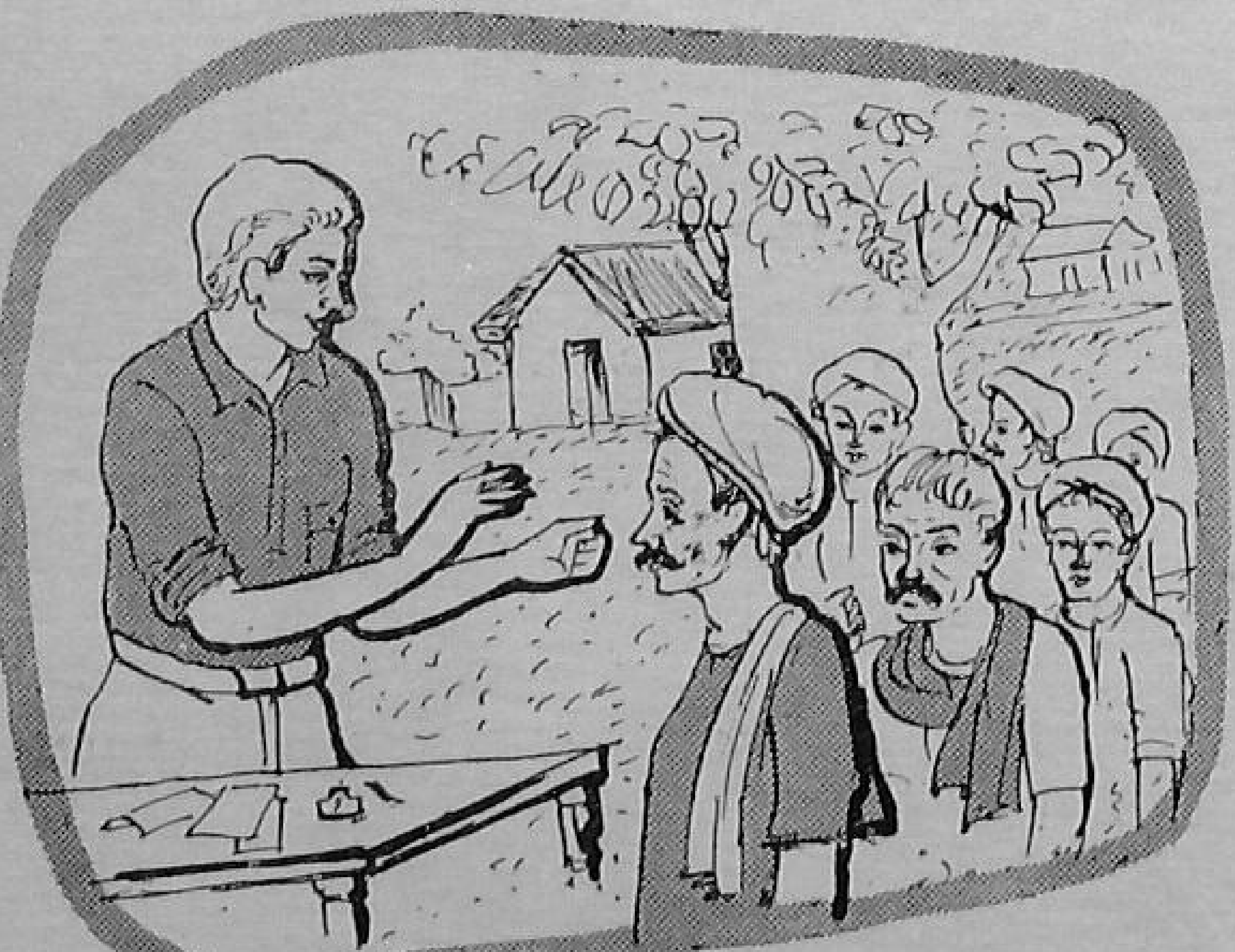
A cultivator says: "Yes, I will plant a green manure crop and plough it under in this one half the field", the other half being

farmed the old way. He does this. All the other village cultivators see him plant the green manure crop. They see the crop planted the old way at harvest time. They say to themselves: "Where can I get seeds for this green manure crop so that I can have a bigger crop next year ?" This is only one example of a *result demonstration*.

The *Gram Sevak* must try to get village people to try new methods. For this he will have to contact both rich and poor people. He must try to find villagers in each village to try a new practice. Then a lot of people can see the results.

The *Gram Sevak* must plan very carefully so that he has time to spend with villagers who are carrying out the demonstrations. He will start with only one or two so that results will be clearly shown. He will plan these in places where many people can see and talk. He will find honest respected villagers to help him show others.

The *Gram Sevak* must write, talk, and bring others to see what is being done. The villagers carrying out these demonstrations should be encouraged to tell other cultivators about the demonstrations, to show them to as many people as can be made interested so that they will want to follow the results of the demonstrations. It is a good idea to put up signs along the road telling about the demonstrations.



The *Gram Sevak* who takes the time to organise a number of well-planned result demonstrations for each practice being recommended in the village will be a wise and successful village worker. A result demonstration gives local proof that the recommended practice will work in the village and that village people can follow it and profit from the practice.

Some of the strong points of the *result demonstrations*, when properly used, are listed below :

1. The result demonstration furnishes local proof of the desirability of villagers following a recommended practice.
2. The result demonstration is an effective method for introducing a new project.
3. The result demonstration appeals to the eye and is effective in convincing those who question the practice.
4. The result demonstration provides a good source of information for meetings, news items, pictures, radio talks etc.
5. The result demonstration furnishes cost data and other basic information of use in revising the programme.
6. The result demonstration rouses the interest and convinces many people.
7. The result demonstration aids in developing local leadership.

Some of the *limitations of the result demonstrations* are :

1. Finding a satisfactory demonstrator is often difficult.
2. The result demonstration sometimes arouses jealousy of other cultivators because of the number of visits of the *Gram Sevak* to the demonstration cultivator.
3. The result demonstration is affected by many uncontrollable factors such as weather.

4. The result demonstration lessens the effectiveness of other extension methods when unsuccessful.

5. The result demonstration requires considerable time to complete and to make results available after completion of demonstration.

Here are some tips which will be helpful to the village worker in deciding when and how to use the result demonstration :-

1. Do not attempt to discover new truths, but rather to prove the adaptability to local situations of those discoveries already made by research agencies.
2. Be sure there is a control plot on the old way of doing the things being demonstrated nearby so that the new can be compared with the old.
3. Use local illustrations of good practices rather than result demonstrations whenever possible in order to save time and extension effort.
4. Place emphasis on quality of the demonstration rather than on the number of demonstrations conducted.

5. Do not repeat demonstrations needlessly.
6. Plan the project to prove or illustrate a definite practice or series of practices recommended for adoption by the community.
7. Obtain co-operatively minded, reliable demonstrators located on a well-visited site.
8. Obtain new demonstrators from time to time.
9. Publicise the demonstration as soon as results are evident.
10. Insist that definite and detailed records, including costs, be kept so that villagers can judge for themselves the merits of the new practice.
11. Hold meetings at demonstrations to study progress and results, and to disseminate information.
12. Use material from result demonstrations in connection with meetings, news letters, pictures, radio talks etc.
13. Analyse the reasons for failure of a demonstration and use results for teaching purposes, relating the causes to the failure.

Visits to the fields and homes of the village people is an important method of reaching and rousing the interest of village people. This is an informal way for the village people to know the *Gram Sevak* and for the *Gram Sevak* to know the villagers and their families. The *Gram Sevak* can earn the respect and trust of the villagers in this way. But since the *Gram Sevak* cannot possibly visit all villagers, those visited must be carefully selected with the object of arousing interest and forming good village contacts.

The *Gram Sevak* must have a real purpose for each visit and visit the villagers only at a time convenient to them. He must visit many families, both rich and poor in each of his villages.

The object of his visits must be to stimulate village discussions about new ideas and create village interest. He must visit those who are leaders or potential leaders. Once these leaders have the vision and interest, they in turn will interest others. It is important that the villagers know *why* the *Gram Sevak* made his visit. He must always be looking for men and women who can help him stimulate village interest and develop village leadership.

Some of the *Gram Sevak's* visits to the village will be coupled with visits from higher officers who want to see the village work and who want to find out how they can best assist the village workers. Whenever possible, these officials should plan night halts in the villages. This will give them the opportunity to mingle in a leisurely way with the worker and the village people and to really learn their views, their wishes, their limitations, their progress. It is obvious that such visits by the officials to the villages intensify the interest of all those concerned with village work.

Personal visits to the villagers' farms and homes is a very useful method in getting acquainted and gaining the confidence of the people. The wise *Gram Sevak* will use this method of gaining for himself village interest and village acceptance as a new friend of the village.

The *Gram Sevak* may want to know some of the strong points of personal visits. A few *strong points of personal visits* are listed below :—

1. Personal visits give the *Gram Sevak* first-hand information regarding village problems and activities.

2. Personal visits develop good will.

3. Personal visits establish confidence in the *Gram Sevak.*

4. Personal visits help in the selection of good leaders and the establishment of good relations.

5. Personal visits stimulate interest.

6. Personal visits usually produce a high ratio of "acceptances" to "efforts".

Some limitations of personal visits are :—

1. Personal visits are a heavy consumer of the *Gram Sevak's* time.

2. Personal visits limit contacts compared with certain other methods.

3. It is not always possible to make the personal visit at an opportune time of day.

4. Neighbours not visited may be disappointed and accuse the *Gram Sevak* of favouritism.

5. There is a tendency to visit some homes and farms repeatedly.

The *Gram Sevak* should consider the following in deciding when and how to use personal visits in village work :—

1. Have a definite purpose for the visit.

2. Scatter visits to many different farms, including all income groups, families with children, and all parts of the village.

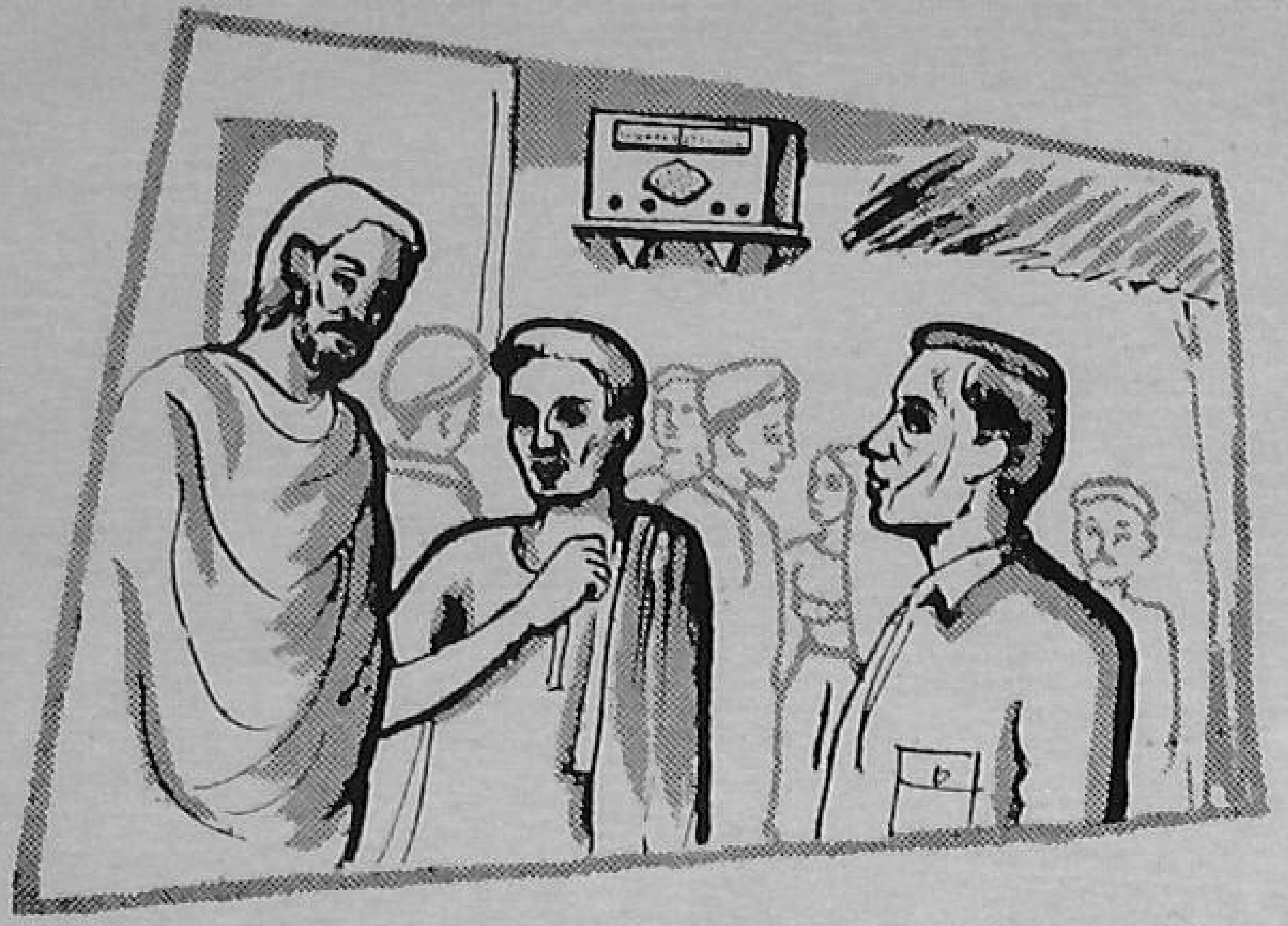
3. Be considerate of time of the farmer and his family.

4. Use visit to reinforce other methods.

5. Use visit to reach those who are difficult to reach with other methods.

6. Arrange a schedule of visits to save time and expense.

7. Leave a clear impression of the object of your visit.



8. Whenever a visit to a family is to render some particular service, it is most important that the family understand the nature of the service, so that they can do the same thing for themselves if the need again arises.

Since the *Gram Sevak* cannot possibly visit and work with all people personally, *group meetings become necessary* as the method of reaching and assisting large numbers of peoples. The *Gram Sevak* will find it necessary and want to have many group meetings. The meetings will make it possible for him to reach and influence many people at one time. The *Gram Sevak* should use these meetings to stimulate many questions, let many people talk about their problems and think about what they can do about them. If many people talk about the village problems and needs, many people will be stimulated to want to do something about their common problems.

One of the most effective ways of catching the attention of a group of people is the weekly or bi-weekly village markets or periodical religious "*melas*", where a *Gram Sevak* can demonstrate his extensive activities through slides, posters, pictures, charts etc.

Village mosques or temples are other places of congregation where a worker might meet a group of people.

The village post office is another such place where a man has to come quite often.

Posters might be exhibited there.

As a general principle the *Gram Sevak* must utilize to the maximum general meetings as a method. To do so will help assure effectively reaching and serving the largest possible number of people.

Some of the *strong points of group meetings* as a method of reaching and influencing village people are :—

1. Through group meetings large numbers of people can be reached.
2. General meetings are adapted to practically all lines of subject matter.
3. General meetings make high quality programmes practicable and financially possible because a relatively large group is reached.
4. General meetings afford opportunity for discussions and questions.
5. Group meetings facilitate action through group psychology.
6. Group meetings promote personal acquaintance between the *Gram Sevak* and the people.
7. Group meetings provide worthwhile social contacts.
8. Group meetings yield high ratio of "acceptance" to "efforts".
9. Group meetings accomplish change in practices at low cost.
10. Group meetings serve as news-creat-

ing agency and thereby stimulate publicity.

Group meetings as a method also have some limitations, which are :—

1. Good meeting places and facilities are not always available.

2. Circumstances beyond control of the *Gram Sevak*, such as conflicting attractions and weather, often result in small attendance at group meetings.

3. Subject matter frequently is difficult to present at group meetings because of the different interests of the group members.

4. Group meetings usually require excessive amount of night work for the *Gram Sevak*.

5. Meetings which are poorly arranged or conducted may have far-reaching unfavourable effects.

In deciding when and how to use group meetings, the *Gram Sevak* may find the following suggestions helpful :—

1. Hold meetings in day time when practicable, to reduce number of evening meetings.

2. Avoid conflict with competing attractions and rush period of work in the fields.

3. Select a meeting place which will provide suitable lighting, seating arrangement, ventilation and other necessary facilities.

4. Hold meetings within convenient distance of those expected to attend.

5. Announce the meeting early in order that preliminary arrangements may be made and adequate publicity may be given.

6. Assure that all interested people will know of the meeting.

7. Encourage participation of local people in arrangements and conduct of the programme.

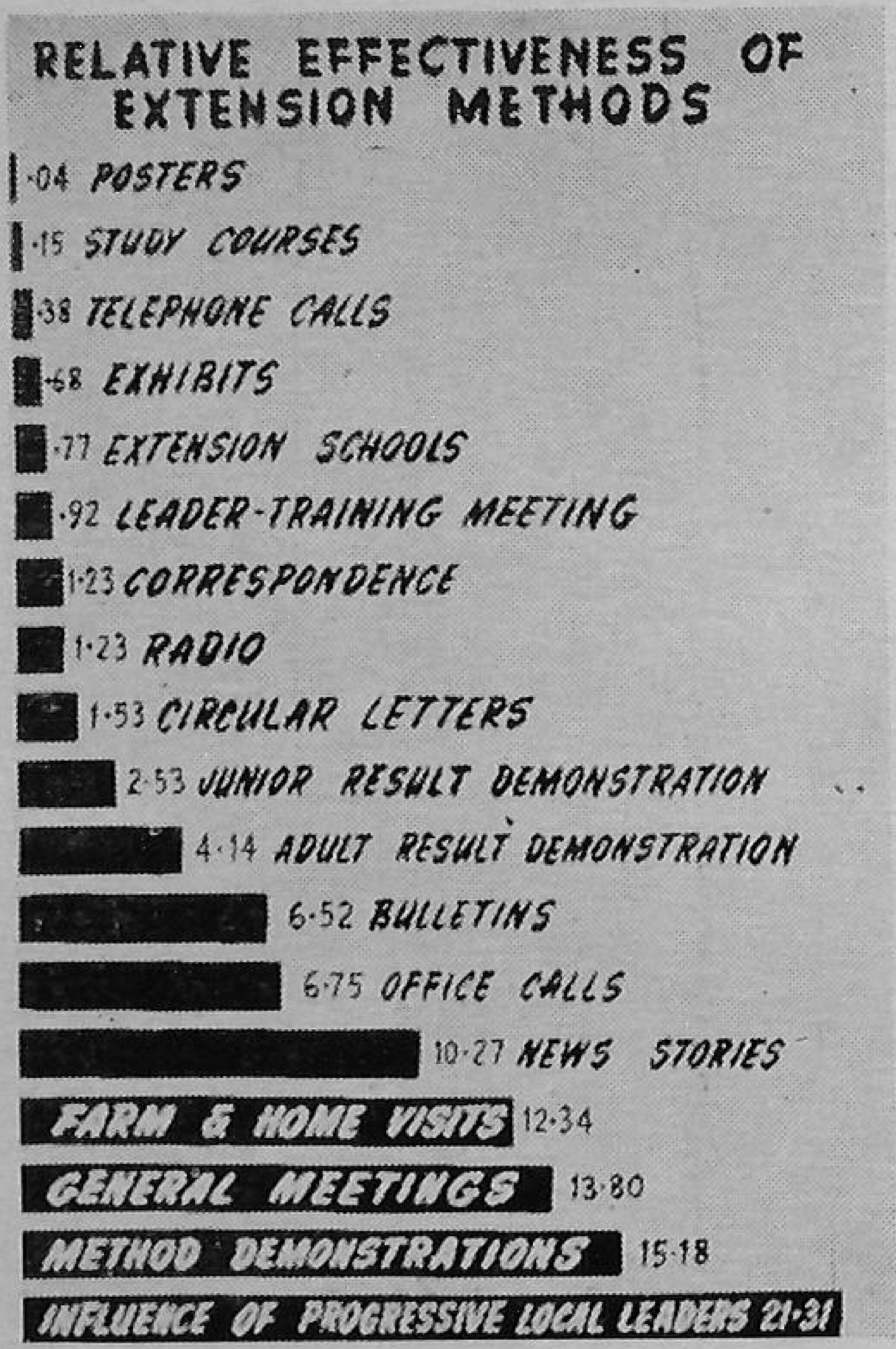
8. Inform speaker regarding local conditions, and suggest subject matter be adapted to local needs.

9. Conduct the meeting in accordance with a definite, well-organized plan keeping in view the following :—

   (*a*) Start promptly and close on time; (*b*) Focus attention on central theme; (*c*) Permit discussion, yet move progressively toward desired action ; (*d*) Use appropriate illustrative material ; (*e*) Take advantage of group psychology ; (*f*) Employ appeals that arouse interest, create desire and stimulate action ; and (*g*) Insure definite action while interest is at height.

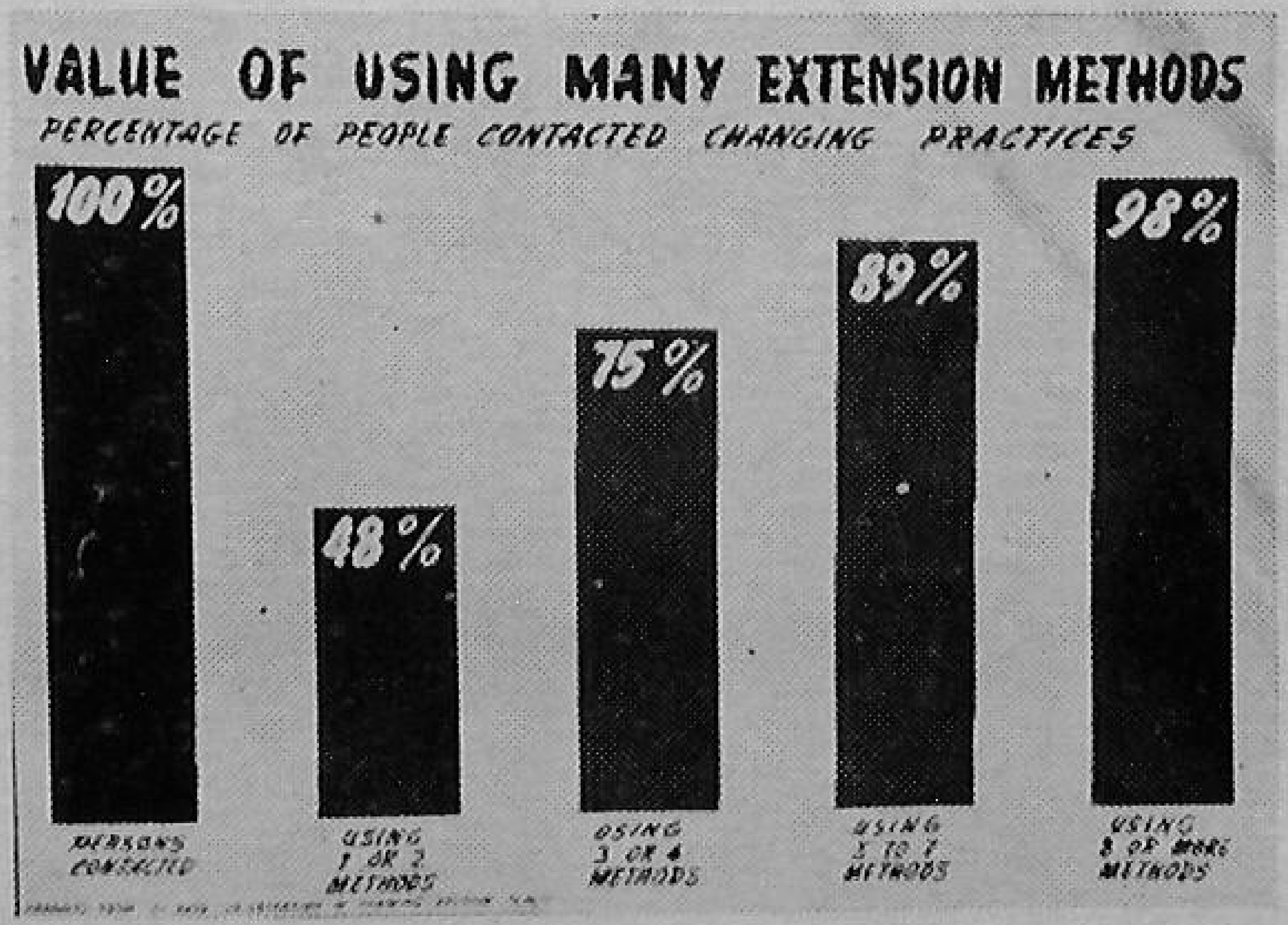
10. Arrange for suitable follow-up work, including publicity about the meeting held.

An Analysis of EXTENSION METHODS



The importance of using a large number of extension methods by extension workers is dramatically highlighted by a recent study made in U. S. A. This study conclusively showed that the effectiveness of an extension worker in influencing the people is in direct proportion to the number of methods which he uses in his work.

The accompanying charts sum up the results of this study and show that when one or two methods were used, only 48 per cent of the people changed practices, but when eight or more methods were used, 98 per cent of the contacted people adopted the improved practices.

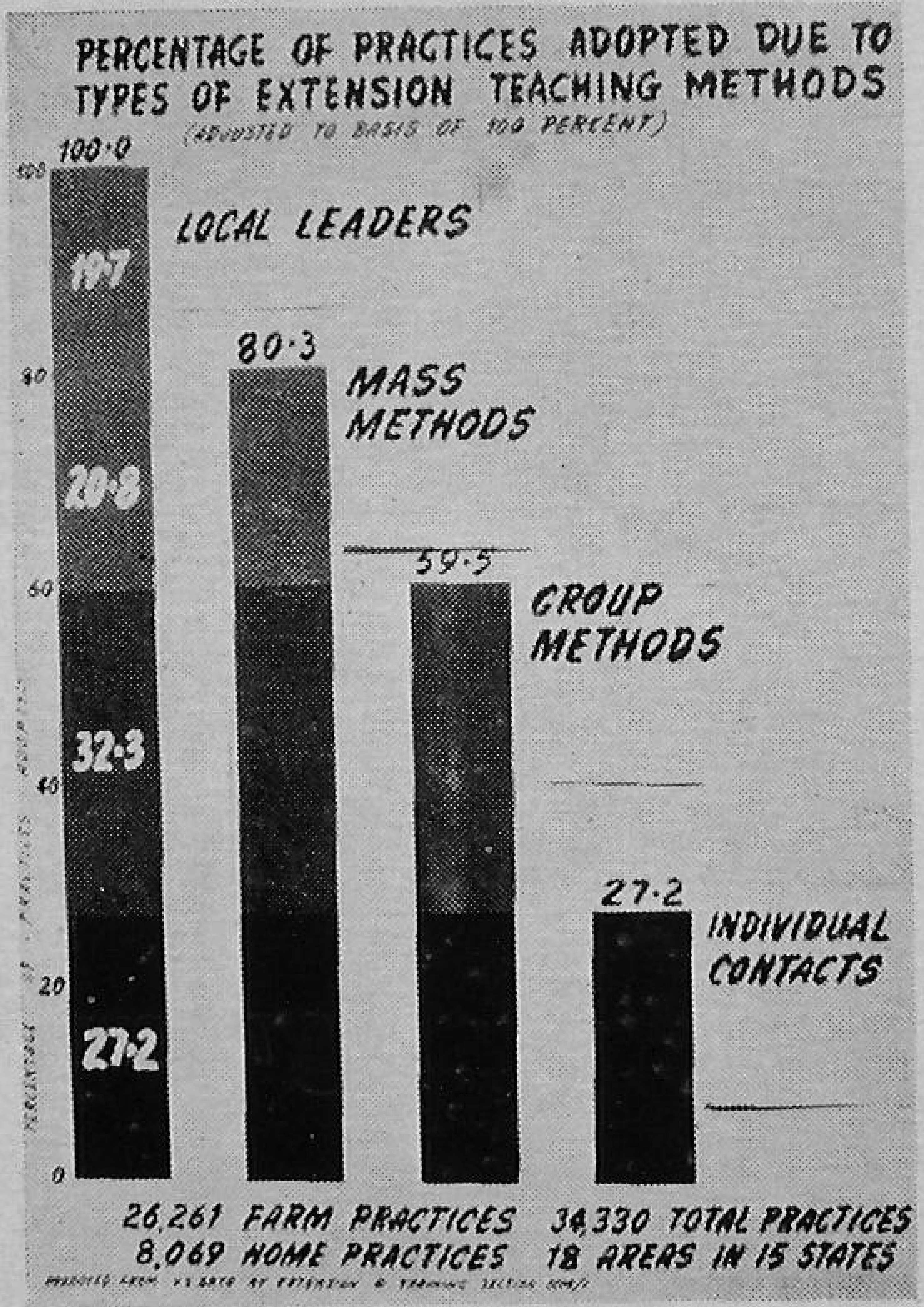


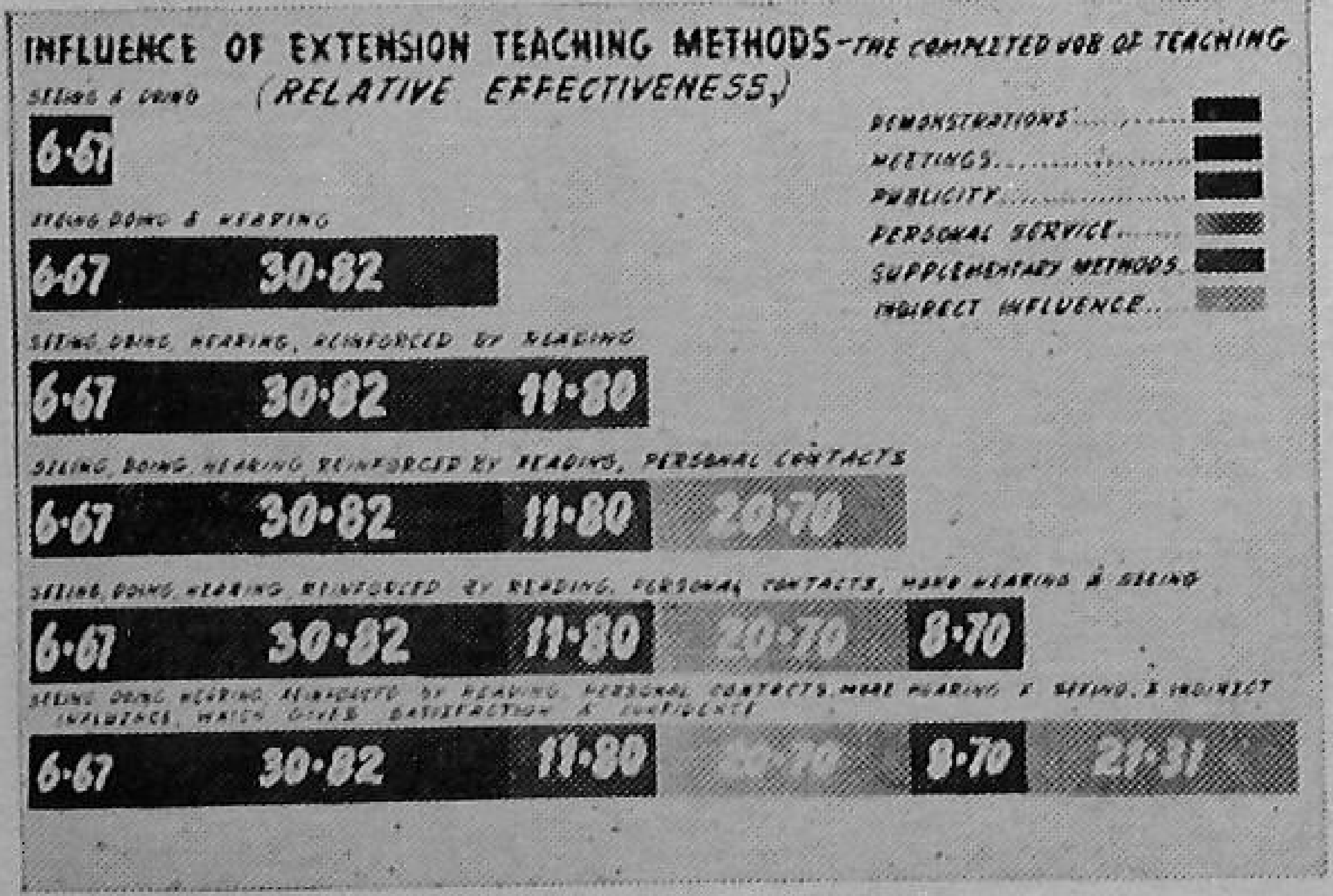
As for the relative effectiveness of the various methods, the study showed that the posters were least effective and the influence of progressive local leaders produced far-reaching results.

The value of mass methods in extension work was shown by the fact that they were responsible for 80.3 per cent of the new practices adopted.

The study also showed that while effectiveness of seeing and doing alone is not much, these very methods when reinforced by reading, personal contacts and mass methods of communication, produce dramatic results as far as extension work is concerned.

This study has thus far-reaching practical implications and its lessons should be understood and applied by all those who are associated with the Extension Training Programme in India, particularly by the instructors and trainees in the Training Institutions, working under the guidance of the Directorate of Extension and Training.





Examinations in Indian Agricultural Colleges

— Geo. A. Fillinger

Examinations in schools, colleges, and universities are among the oldest and most important educational practices. Methods used in testing the progress of students have been subjected to critical study and evaluation in recent years. Authorities on Education list many purposes of examinations. Among the purposes of examinations are:—

1. Testing the retention of information or the achievement status;
2. Stimulation or motivation of daily work;
3. Measurement of the efficiency of teaching;
4. Development of intellectual powers;
5. Improvement of teaching techniques; and,
6. Improvement of student discipline.

There are two general types of college examinations—external and internal. External examinations are conducted by persons other than the Lecturers who teach the courses. Internal examinations are those given by the Lecturers of particular courses. In most Agricultural Colleges in India, promotions and degrees are entirely dependent on the passing of external examinations. The Vice-Chancellor of Osmania University recently wrote: "It is true that our examination system acts as an incubus on true education and that nowhere else in the world are formal examinations considered the 'be-all' and 'end-all' of education".

How does each of the two systems perform the functions listed above?

1. Testing the retention of information

Observations of the educational system during his fifteen months' work in India leads the writer to conclude that most of the agricultural students do not pay much attention to their studies during the school year, but make frantic efforts in their "last minute" preparation for the annual external examination. Experts in education agree that such last minute cramming is not conducive to the best retention of the information acquired, neither is it conducive to the health of the students. Facts so acquired are often forgotten about as quickly as they are learned. These external examinations are more of a test of the students' capacity for cramming and of their short range memories. Frequent internal examinations, on the other hand, would induce the students to study their assignments regularly, make frequent reviews for tests, and class discussions following such tests would impress upon the students the correct answers. Such studies, reviews, and discussions would lead to better retention of information because of the desirable association of one fact with another.

2. Stimulation or Motivation of daily work

Frequent internal examinations, both announced and unannounced, would keep students "on their toes" throughout the school year. This is especially true if the students know that the results of such examinations will be used in determining their final promotions or failures. Since their own Lecturer will be the one to prepare these tests, based on his lectures, discussions and assignments, the students will pay more attention to their class work. Watching their marks as they accumulate and trying to keep up or outdo their fellow students, should also motivate their daily work and intensify their interest. Frequent reviews are essential in learning, and examinations could thus peform a unique function in motivating reviews.

3. Measure of the efficiency of teaching

Under the present educational system, the Lecturers have no way of determining the effectiveness of their teaching until after the students have appeared for their final examinations. If frequent internal examinations were given, the lecturer would have an immediate measure of his teaching efficiency.

4. Development of intellectual powers

Under the present system each Lecturer must adhere closely to the syllabus in order to prepare students for final examinations. This leaves little time for open discussion and opportunities for developing the intellectual powers of students. The "best student" will be the one who can memorize those facts, which an outside examiner is likely to ask. There is no time left for the hard working concientious student who might want to apply some of the facts learned, to every day problems. Students with such training are ill-prepared for meeting even the every day problems in connection with the agricultural arts and sciences. Good examinations will help to form many intellectual habits that will be useful in meeting and solving every day problems. Among these will be the habits of concentration, self-reliance, persistence and verification. The very taking of the examination presents problems which tend to develop these habits. In order to answer the ques-

Gram Sevak trainees spraying insecticide on a farmer's field

tions, the students must concentrate, rely on their own judgement, and stay with the test until completed. After the examination is over, they will want to verify the answers which will lead them to consult their texts or consult their lecturer or other authorities. President A.L. Lowell of Harvard University stated, "Throughout our lives we are constantly forced to muster all we can of our previous knowledge and the habit of doing so can be cultivated by practice. How often when the occasion has passed do we ask ourselves, as a student does after an examination, why we did not remember some essential fact. The art of recalling quickly, fully and accurately is certainly a valuable part of mental training. It is a special art, not the same as a rich store of knowledge".

5. Improvement of Teaching Techniques

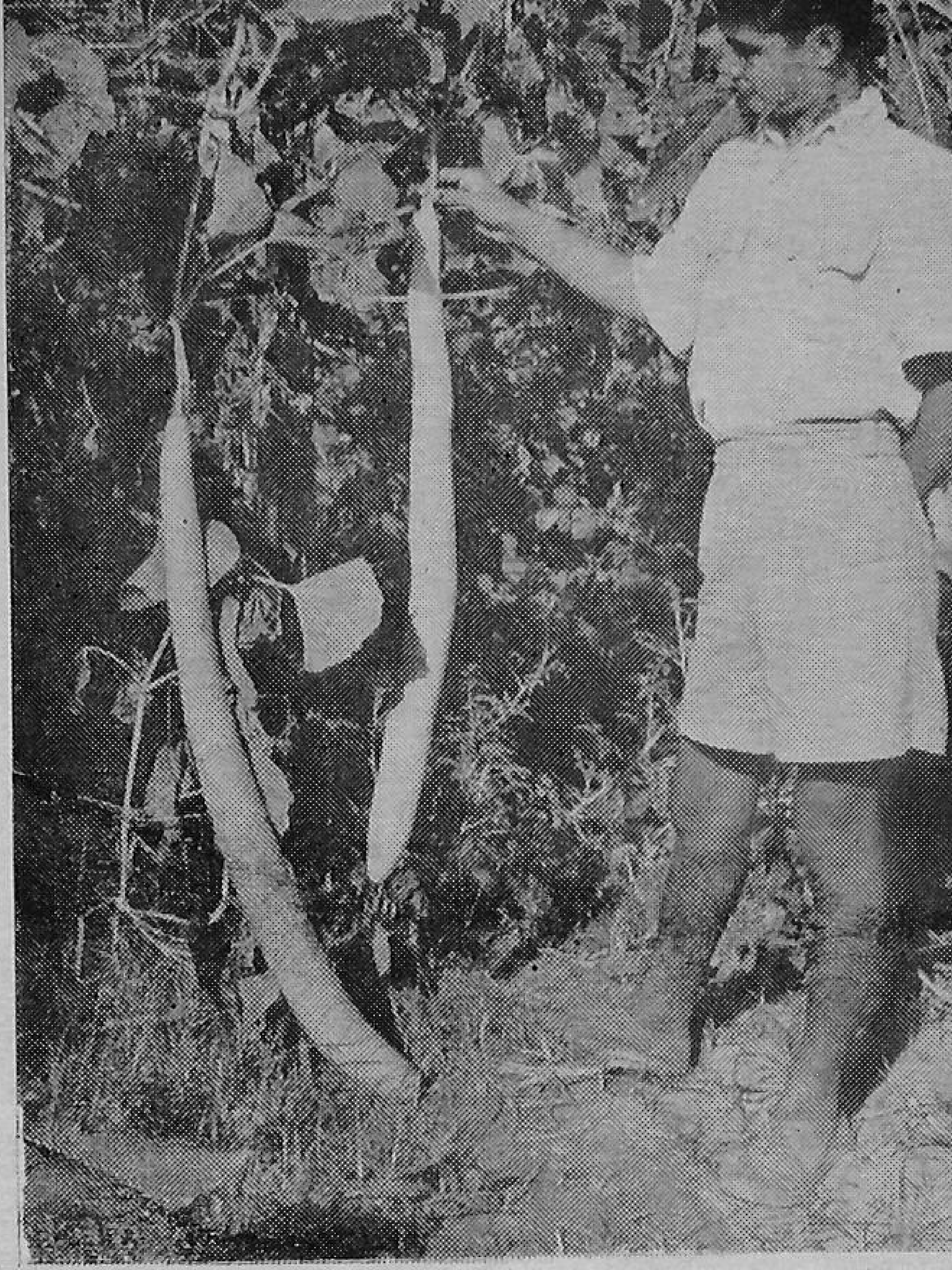
Most lecturers under the present system are so busy carrying heavy loads of teaching, studying the syllabus, and predicting what the external examiner might ask, that they do not have time to experiment with new teaching techniques. The preparation of frequent tests, both subjective and objective, would in itself help to improve the teaching methods. The response of students to the lecturers' examinations should help the teacher in improving the effectiveness of his teaching. The collecting of material for a good examination will yield good meterial for daily instruction and class discussion. Examinations can also be used by instructors as a sort of diagnosis of difficulties in learning. If common difficulties are found among the entire class, it may reveal teaching defects that can be corrected by experimentation.

6. Improvement of student discipline

Under the examination system, most students pay very little attention to their

Integration of Teaching, Research and Extension

— H. W. Hannah



A Gram Sevak inspecting an improved variety of bottle gourd

Many times and in many places I have heard both American and Indian educators state their belief in the need for "integrating" teaching, research and extension in colleges of agriculture. With this view I agree, but I do not believe that the meaning of "integration" has been very well spelled out to the majority of Indian agricultural college and research institute staff members. For example when the subject is discussed in a group of teachers and research workers, members of each group are likely to maintain that they are doing full time teaching or research and would have no time to do any of the other. This is quite likely true. But it shows a lack of understanding of the full meaning of "integration". It does not consist in every teacher doing research and every research worker teaching. Particularly it does not mean that a full time worker should commence doing part time work of some different kind simply as a result of an administrative fiat !

As I understand "integration" of teaching, research and extension, this is what it does mean :

1. That there will be "common" administration for teaching, research and extension from the college department all the way up to the university or state level. This means that the head of a college department will administer the teaching, research and extension which evolves from the subject matter of his department. He can thus study the capabilities of his staff and vary their responsibility to more nearly meet these capabilities. This generally results in a small proportion of the staff doing full time research, a small proportion doing full time teaching and a larger number doing both teaching and research, with the percentage of time devoted to each varying, but with a fairly definite division spelled out in the contract of employment. Extension men are generally engaged full time in extension,

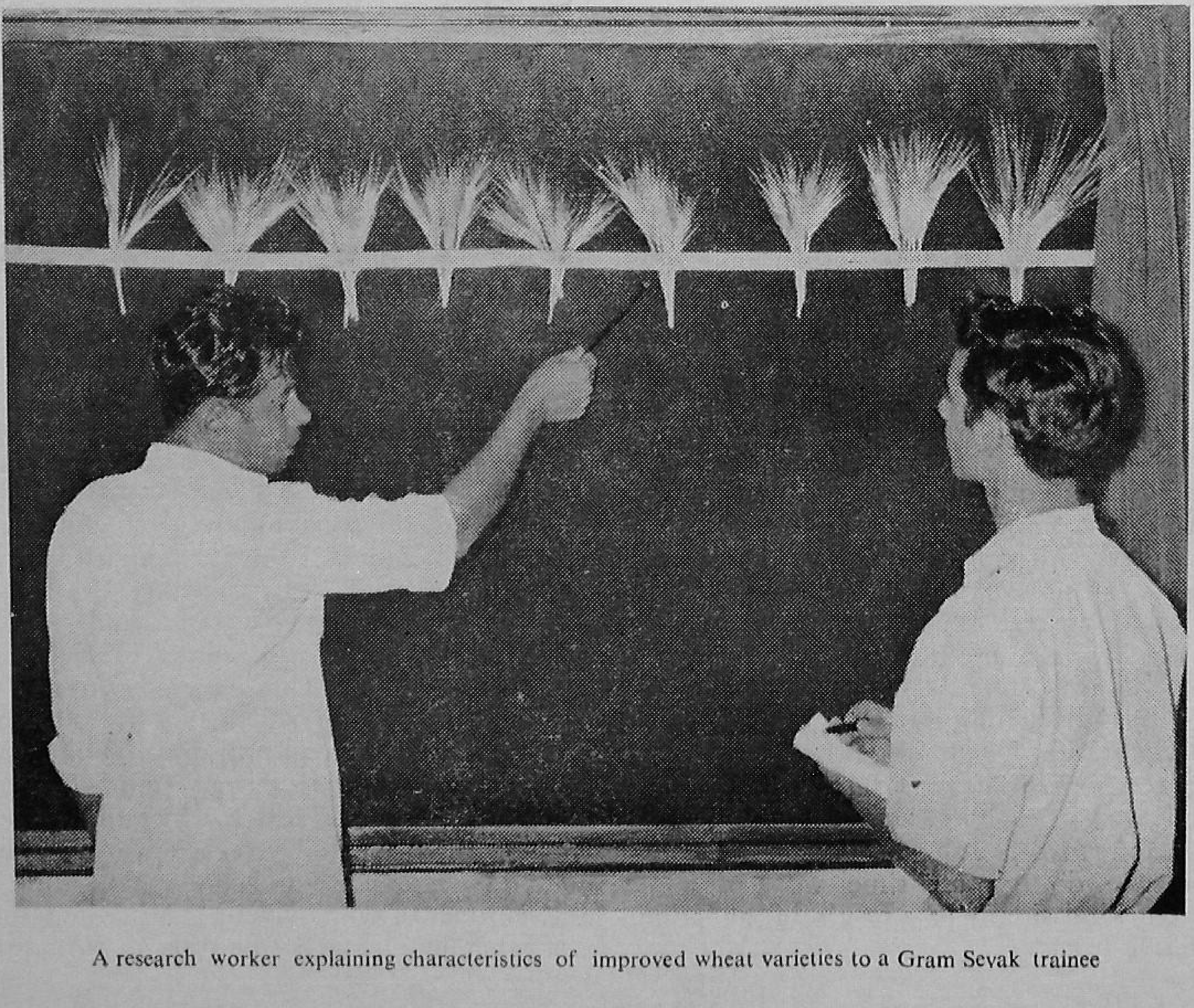
but they mingle with research workers and teachers, sit in departmental staff conferences with them, collaborate in many informal and formal undertakings with which the department is concerned — field days, farmers' days, meetings of special interest groups and others.

Some of the "by-products" of the type of administration described are savings in scientific equipment and library expenditures, more economic use of space and transportation, more realism in the research programme with applied research taking its rightful place, better teaching and better informed extension specialists.

2. That related disciplines within the college can be brought together in the solution of problems, since the departments are in turn under one head who is also responsible for the teaching, research and extension in his college. In American Land Grant Colleges there are many joint committees, much research is planned jointly and certain courses are offered jointly by two or more departments of the college — a basic course in animal science for example or courses in agricultural statistics. This is rather important since the farmer does not sort his problems by college departments !

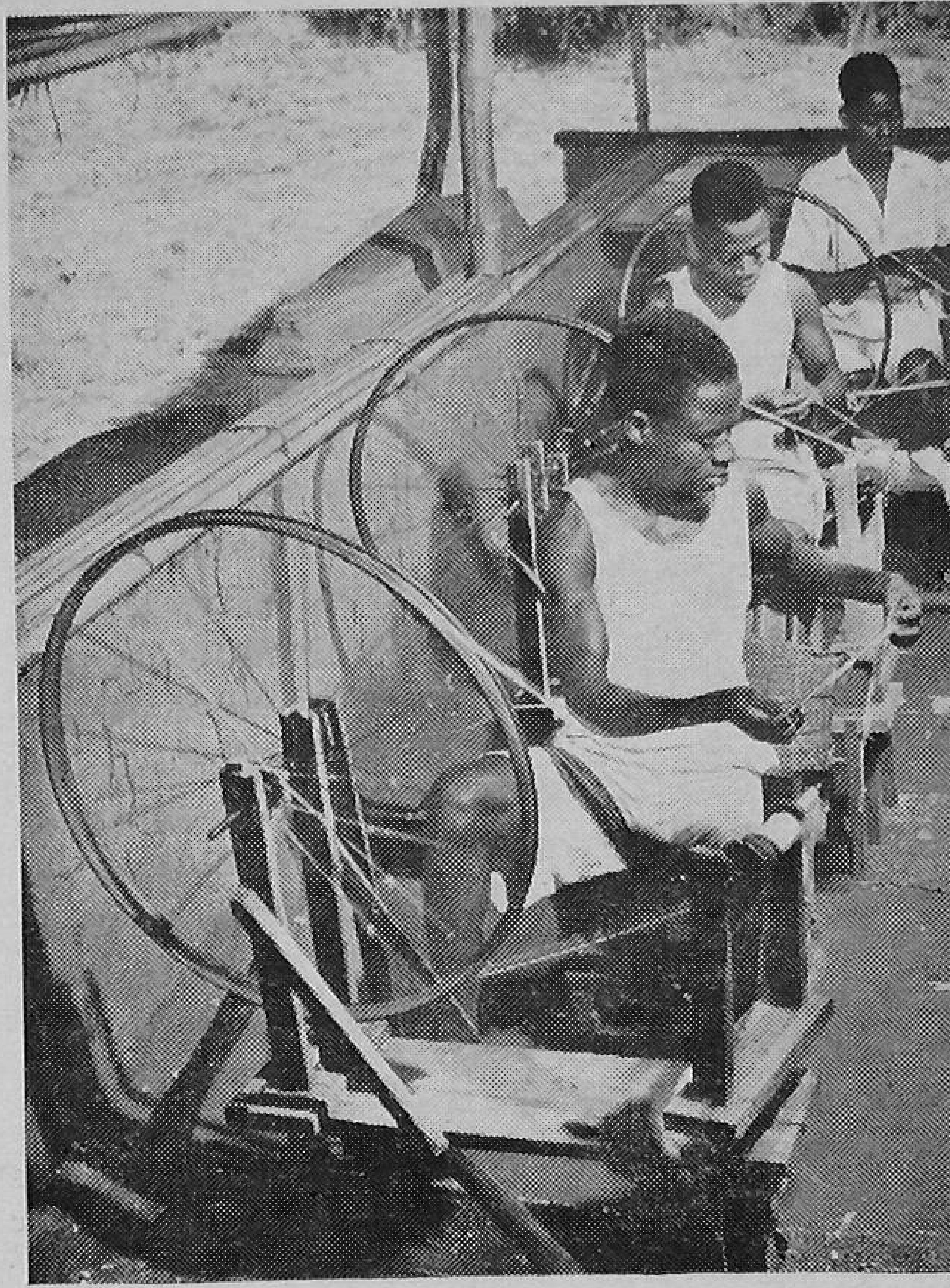
3. That administration at the state level can achieve better balance in the use of state resources for teaching, research and extension and that it can better plan the scope and location of agencies within the state.

Admittedly it is much easier, for a number of reasons, to achieve integration when it can be planned from the beginning, than it is to achieve it by taking an existing research organization and an existing college and placing them under the same administrative direction. But even in the latter case there is much to be gained if it is done wisely and gradually — but in the end completely.



A research worker explaining characteristics of improved wheat varieties to a Gram Sevak trainee

Community Development in West Africa



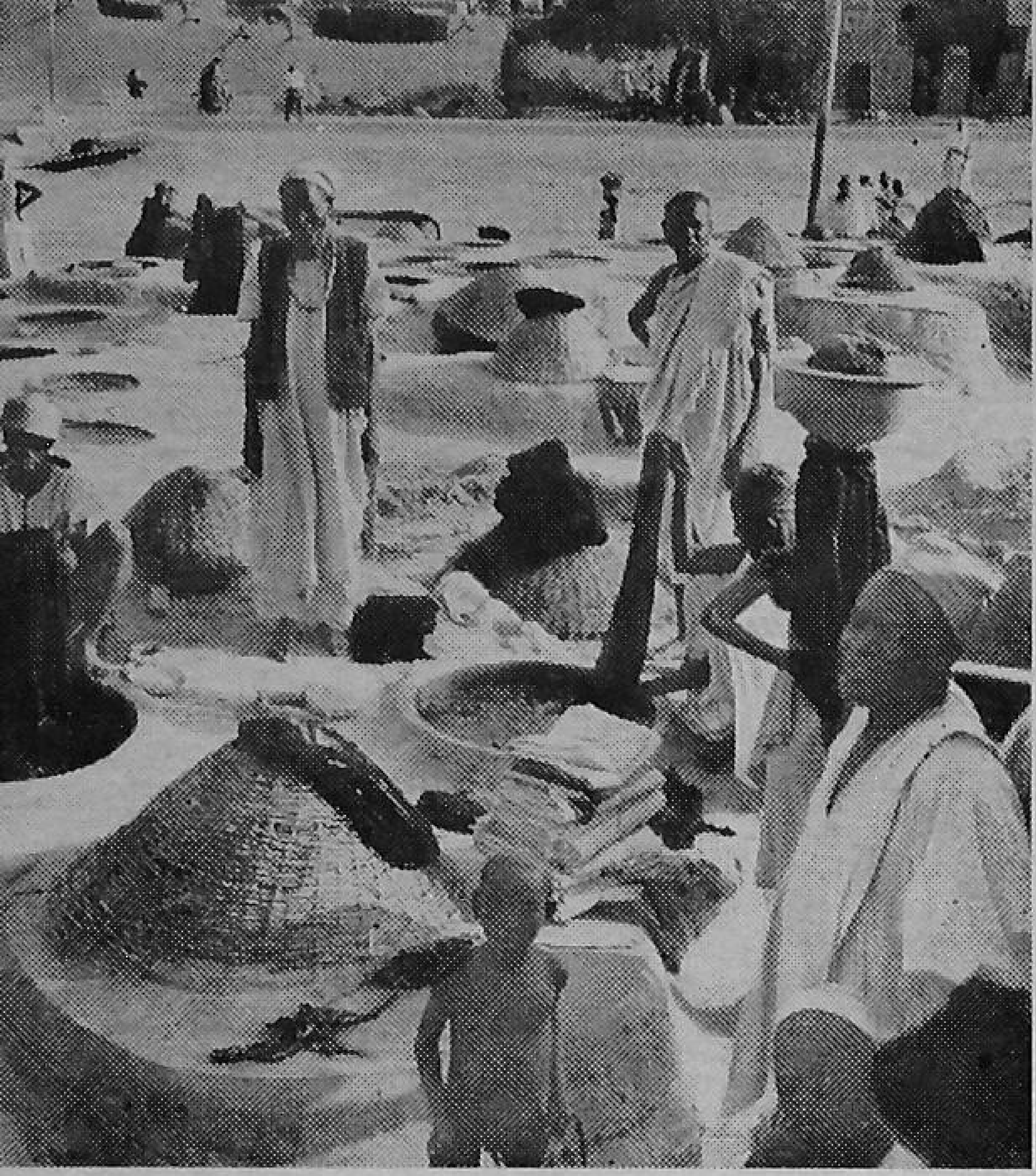
Spinners in a factory at Ikot Ide, Nigeria

Extension and Community Development are now accepted as the central features of British African Colonial policy, and the movement is spreading elsewhere. The following examples illustrate the scope and variety of the schemes in operation :—

MASS LITERACY AND COMMUNITY DEVELOPMENT CAMPAIGN IN GOLD COAST

A comprehensive programme prepared in 1951 by the Government aims at accelerating progress in rural areas of the Gold Coast. It lays down that the improvement of village conditions cannot be attempted without the full cooperation of the villagers ; and that unless home and village life is improved the young people who will receive school and college education may relapse into the old ways or rebel against village life, in which case the drift to the towns, with all its problems, would be accentuated.

Moreover, the far reaching developments in local government now being planned must be underpinned by advances in mass literacy and Community Development; for a literate adult population is essential for the effective operation of local councils and a modern system of local government. In addition, a spirit of community development at the village level would invigorate the new forms of local government. Through the efforts of the local development committees people



Weaving Centres develop new craft in Nigeria. The picture shows dye vats in the old city of Kano

Community Development; training for leaders who can, in their turn, call out voluntary effort and stimulate local self-help; a careful approach to adults; the development of self-help.

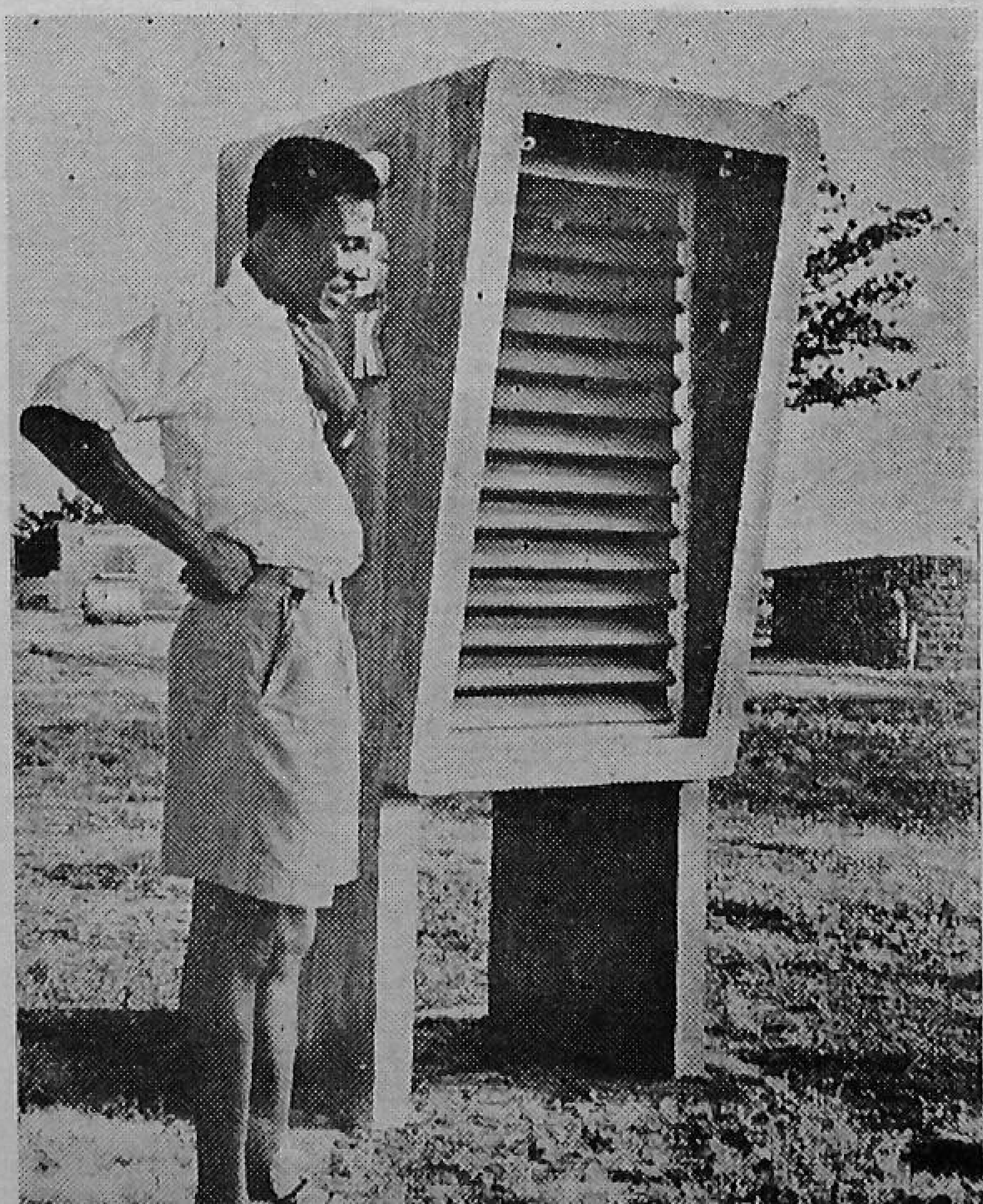
COMMUNITY DEVELOPMENT IN TOGOLAND

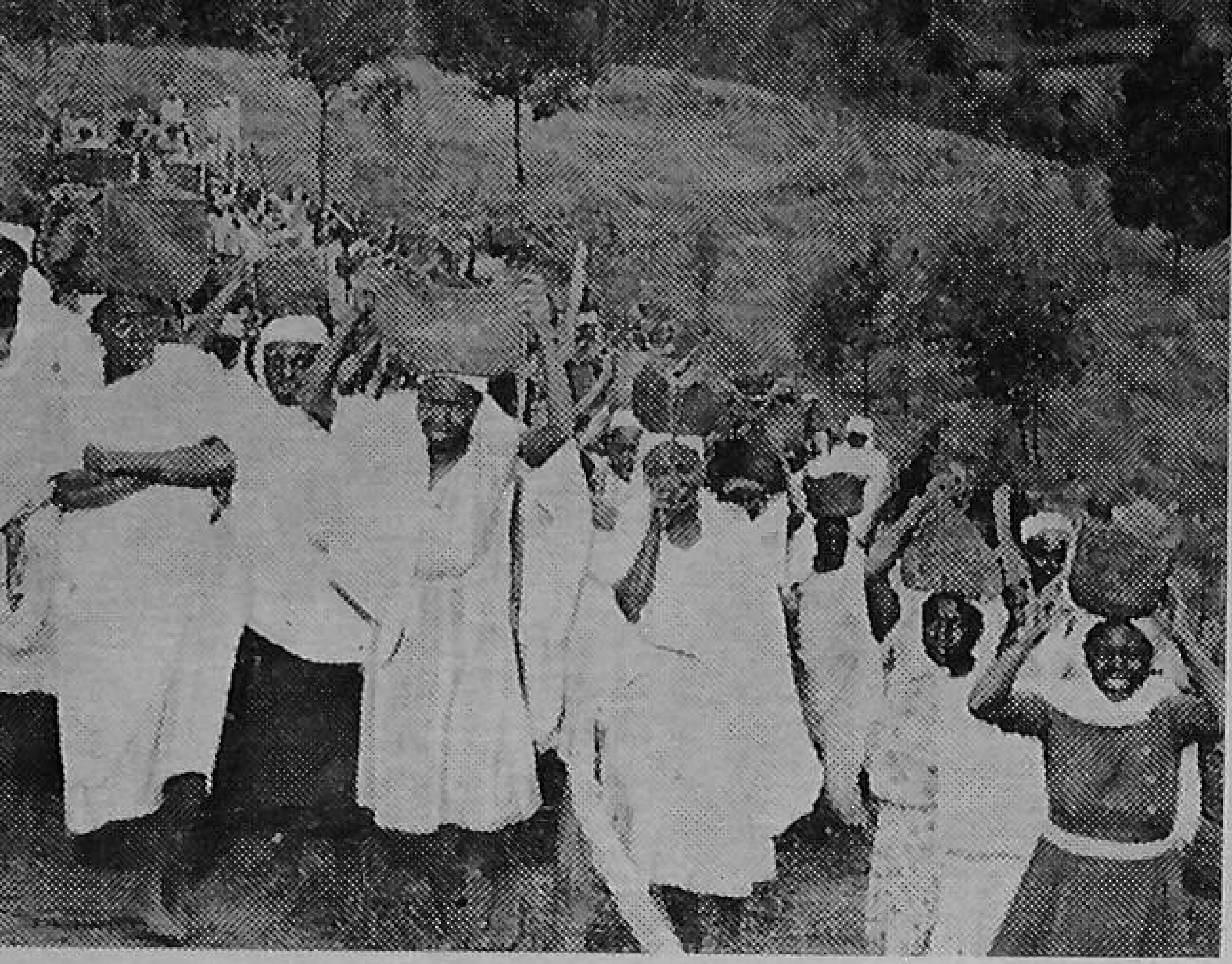
A comprehensive campaign was organised during 1949 in Togoland among the Ewes, an intelligent, vigorous tribe. The object was two-fold: to provide opportunities for training voluntary leaders in social and Community Development; and to organise this training in short, intensive courses held in rural areas in such a way that they constituted a technique for arousing enthusiasm and stimulating understanding. The technique was designed for a comparatively advanced territory where there have emerged clubs, churches, schools and societies and a class of young educated Africans eager to join in the activities of these organisations, all of which require efficient, voluntary leadership.

are beginning to see results for their first essays in community self-help. While this is at present appreciated chiefly at the village level, the knowledge should lead to a realisation of the importance of inter-village cooperation for common services in local and district councils.

No single factor contributes more to backwardness among Gold Coast villagers than ignorance due to illiteracy, and mass literacy campaigns are, therefore, prominent in the Gold Coast plan. Already teams in Togoland, Ashanti, and in the Cape Coast areas have done valuable experimental work, and in 1951 almost 10,000 persons were recorded as attending literacy classes. The principles which underlie the campaign are a concentration of effort in time or space—i.e., either an 'all-in' campaign over a wide area for a short time, as for mass literacy, or a prolonged effort concentrated on a village or group of villages, as for a demonstration of

A community listening set is designed in the form of a kiosk. It gives good audibility to a crowd of 50 people





About 700 African women turned up to help the clearing of bush. Photo shows a group of women, who sang and danced while they went about their work, carrying sand used in house construction

Under the supervision of an agricultural inspector young African workers, many of them members of young farmers' clubs in the district, construct bench terraces

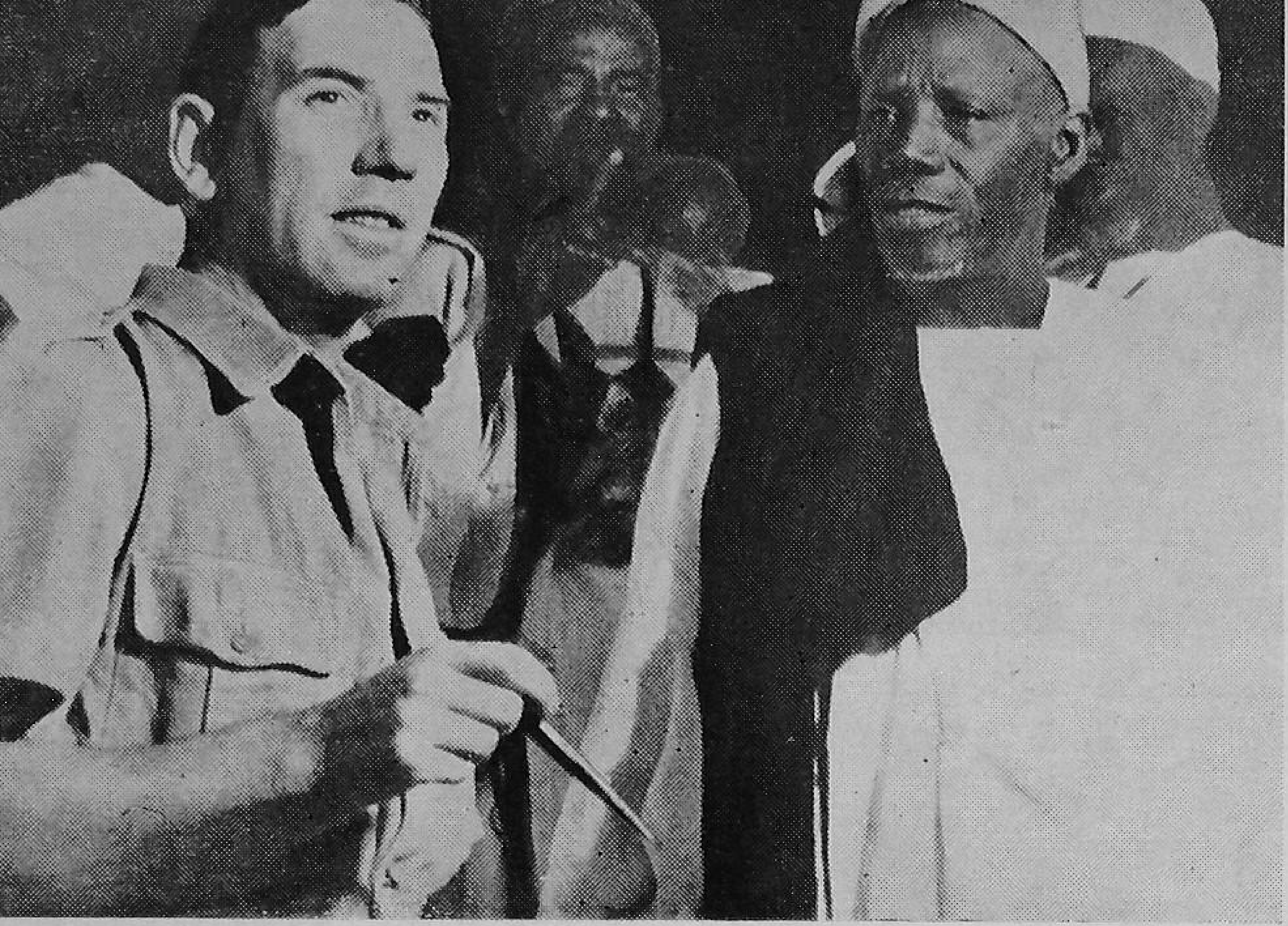
A number of organisations gave valuable help. Achimota College, for example, lent musical instruments and gave assistance in the provision of mass literacy material; the Army helped with equipment and training for physical recreation; the Missions with the loan of some of their finest Ewe teachers. The team was, in fact, made up of 'borrowed' personnel and included a bandsman from the police and a male nurse-dispenser from the medical department.

The nature of the campaign was explained in personal visits by the leader to all the native authorities, school managers, headmasters and departmental officers in the areas. It comprised seven main subjects : literacy, first aid, physical recreation, discussion groups, music, drama, and crafts.

How to teach adult literates to read in the vernacular was perhaps the most prominent feature of the training programmes. The aim was to use the popular enthusiasm for mass literacy to encourage readiness to give voluntary service generally. The first step was the production of an Ewe primer by the cooperative effort of a group of Ewe students, an African artist, the Achimota College press, which printed the text, and the Survey Department, which engraved the illustrations. Scores of illiterates came direct to the course under the misapprehension that it taught them direct how to read. It was decided not to turn them away since they provided teaching practice for those taking the training course, proved that it was possible to teach illiterates in a few days, enhanced local good will towards the staff and coaxed many people who would otherwise have been too shy to take part both in the literacy and other courses.

Physical training courses provided ideas, enthusiastically taken up, for games in schools without a large playing field, and discussion

The patients themselves helped to pay for the maternity home at Orlu (Nigeria)



Through the cooperation of a wise chief and a keen district officer, no dream is beyond attainment by any village in West Africa

groups suggested ways of infusing new life into small local associations. Most popular of all was the music, for which the Ewes have a special talent, and the services of the bandsman to help and instruct village bands were in constant demand.

The results of the campaign, though uneven, were most encouraging. At one village a Community Centre was set up, at another a Youth Society with literacy classes, games and other activities started, and many villages took up literacy schemes. The effect of the course on the members of the team was also very marked. An interesting development was the formation of an Anglo-French team to conduct courses among the Ewe on both sides of the Togoland frontier.

THE UDI DEVELOPMENT SCHEME IN NIGERIA

Udi, a thickly populated administrative division of the Southern Nigerian rain forest, adjoins the Enugu coal mines, some 50 miles east of the Lower Niger. Here a progressive tribe, the Ibos, who are mainly very small peasant farmers, discovered that their Native Administration could not pay for all the developments they required. They therefore decided to undertake these developments themselves on a voluntary basis under the guidance and direction of their District Officer. Starting in 1943, they built many miles of road, and erected village halls, cooperative consumers' shops, postal agencies, reading rooms, a small market and sub-dispensaries. Within two years some 40 villages were taking part.

An excellent example of how the scheme functions comes from the village of Ogwofia. There the people decided to raise a village fund, and with financial help bought some communally-owned machines for processing their palm fruit; a penny was charged for use of the machines, half of which went to the village fund. Stones and other building materials were then collected for a Cooperative Consumers' Shop, the people themselves paying for the cement and the services of the Native Administration bricklayer and carpenter, while corrugated iron was provided by the District Officer at half-price. A Reading Room was also built by voluntary

labour and with the help of a government grant to cover the cost of materials. Next, the women decided to build their own maternity home. The cost was £160, a severe drain on village resources. But towards it the women agreed to pay a tax of 2s. 6d. a head, which entitled them to membership of the maternity unit; the Co-operative Shop paid over its profits — about £65 — and the cost of the roofing and the cement for the building and for a water tank was defrayed by the Native Administration. In the same way a sub-dispensary was built to store drugs and equipment, and the dispenser from Udi—eight miles away — was asked to cycle down regularly to use it.

Other improvements followed and as the elders from nearby villages were encouraged to visit Ogwofia they were soon starting development schemes of their own. The Ogwofia people also took part in the mass literacy classes which formed the initial stage of the Community Development campaign. While these courses produced few literates, the District Officer considered that their stimulating effect on morale was considerable and appears to be permanent.

THE EMIR ABUJA's COMMUNITY DEVELOPMENT SCHEME IN NIGERIA

The Abuja Emirate, which lies in the Niger Province in the south-western part of Northern Nigeria, has an area of 12,337 square miles and a population of some 67,000 Gwaris — a backward and primitive tribe — whose villages have little or no water, and are badly planned and insanitary.

The Emir, an enlightened and energetic ruler, drew up his own 13-point development programme and it was tried out in some 28 Gwari villages. It included schemes for increased agricultural production, the introduction of cash as well as subsistence crops, mass literacy, an elementary school, a medical dispensary, a village drainage system, and contour farming as a measure against soil erosion. In evolving and implementing his far-sighted programme the Emir can, of course, call for the advice and help of the government departments — agriculture, health, education and forestry.

The Emir opened his campaign at the

A potter learns his trade

easily accessible village of Jiwa by making personal contact with the heads of each of its 50 families. As a result, the village was moved to a new and tsetse-free site and rebuilt by voluntary communal labour on improved lines and with better drainage facilities. Communal labour was also used to build a dam to control the water supply and so to create small, flooded rice farms. Profits from the rice venture were divided equally among the families taking part in it, each family receiving rather more than enough to pay all its taxes.

Sixty dams were built by voluntary communal labour in the villages, and in a single season 250 tons of rice were grown and sold for nearly £6,000. Five of the villages have also been rebuilt, six (including Jiwa) now have elementary schools, and 28 classes in literacy have been started. Jiwa is still the only village where progress has been made under every point of the Emir's programme, and future plans for the village are centred on mixed farming.

MASS LITERACY CAMPAIGN

Abak, a district in South-Eastern Nigeria, was the centre in 1949 of a mass literacy campaign. The area covered was about 500 square miles, with a population of some 80,000 adults who speak a dialect of Efik. The project was planned to take four months, on the assumption that the people's interest could not be held for a longer period, and that thereafter only those who had learned most would wish to continue. It was, however, hoped to hold classes on a smaller scale after the campaign, and to conduct a second campaign at a later date. The organisation was to be carried out by the people themselves, through committees appointed by their clan councils. These committees would arrange the meeting places, enrol pupils, and find instructors who would be given a short preliminary course. Committees would receive financial assistance at the rate of £1 for 25 pupils attending: at the end of the period they would have to finance themselves. The Native Administration, working on a suspense account would obtain equipment for re-sale to pupils.

After a preliminary survey by the Adult Education Organiser who made himself acquainted with general conditions in the district and with the important chiefs in the area, a representative meeting was held and the project explained. A small central committee was formed to decide the opening date of the campaign, the allotment of adult education centres, the selling price of equipment, and so on. The Adult Education Organiser and the District Officer then visited each clan council in the district and as a result every clan council appointed its own clan committee. When the number of centres had been approved (a total of 109) each was given its own centre committee composed of four members, the majority of them, chiefs.

The initial enrolment totalled 8,051, varying from 25 to 250 pupils at each centre. By far the best results were obtained in centres with an enrolment of between 50 and 125; for the larger centres were beyond local organizing ability, and lack of numbers had a depressing effect on the small centres. Pupils were graded from the start according to their performance, and the idea was to promote them through three grades, those in Grade III working for the Test and Literacy Certificate. The literacy test was to read an unseen passage in a newssheet fairly fluently and to write a letter. By the official end of the campaign 417 had been awarded the certificate and many were still waiting to be tested ; but the final total of those passing the test was expected to reach 1,500. Of the 109 centres 97 functioned throughout the period; and the technique evolved for the campaign was successfully applied.

Marching Ahead

Expansion of Agriculture and Veterinary Education in India

A total of 6,500 graduates in agriculture and 5,000 graduates in veterinary science will be required by 1961, as a result of the decision of the Government of India to cover the entire country with National Extension Service Blocks by the end of the Second Five Year Plan.

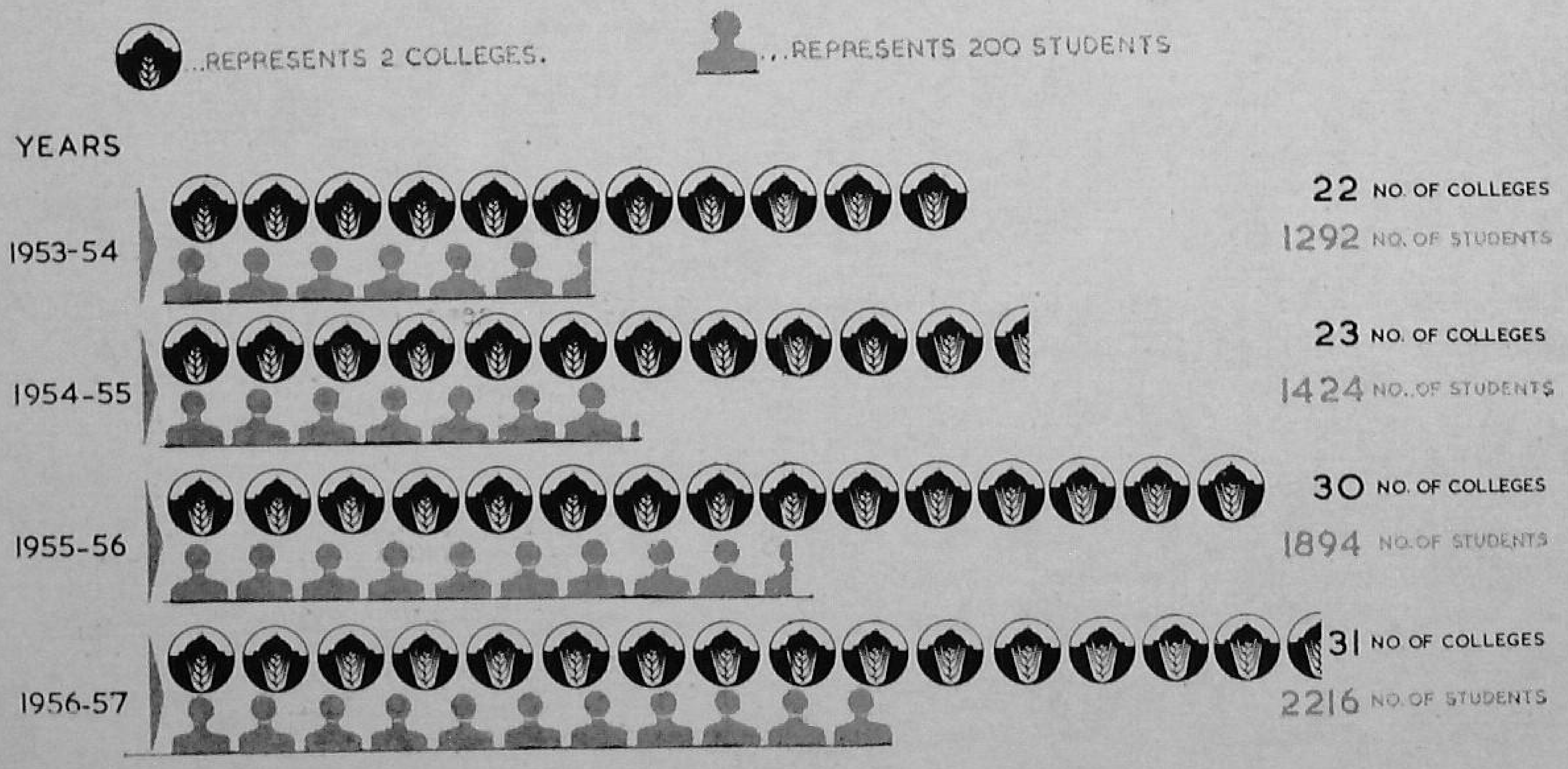
In 1952, there were only twenty two agricultural colleges in the country with an average output of 1,100 graduates per year. To fulfil the requirements of the Second Five Year Plan, the Government of India has given financial assistance to the states to start three new agricultural colleges and to expand four existing ones. In addition, some state governments have established new agricultural colleges on their own and expanded existing ones, to meet the increased demand of agricultural graduates. Today there are 31 colleges of agriculture functioning in the country. In 1956-57, a total of 2,216 students were admitted in these colleges as against 1,292 in 1953-54.

In 1953, there were only nine veterinary colleges functioning in the country with an average output of 300 graduates per year. To meet the increased demand of trained personnel in veterinary science, the Government of India took the following steps:—

1. Four new veterinary colleges were established with the financial assistance of the Central Government.
2. Double shifts were started in five existing colleges, the entire expenditure being borne by the Central Government.

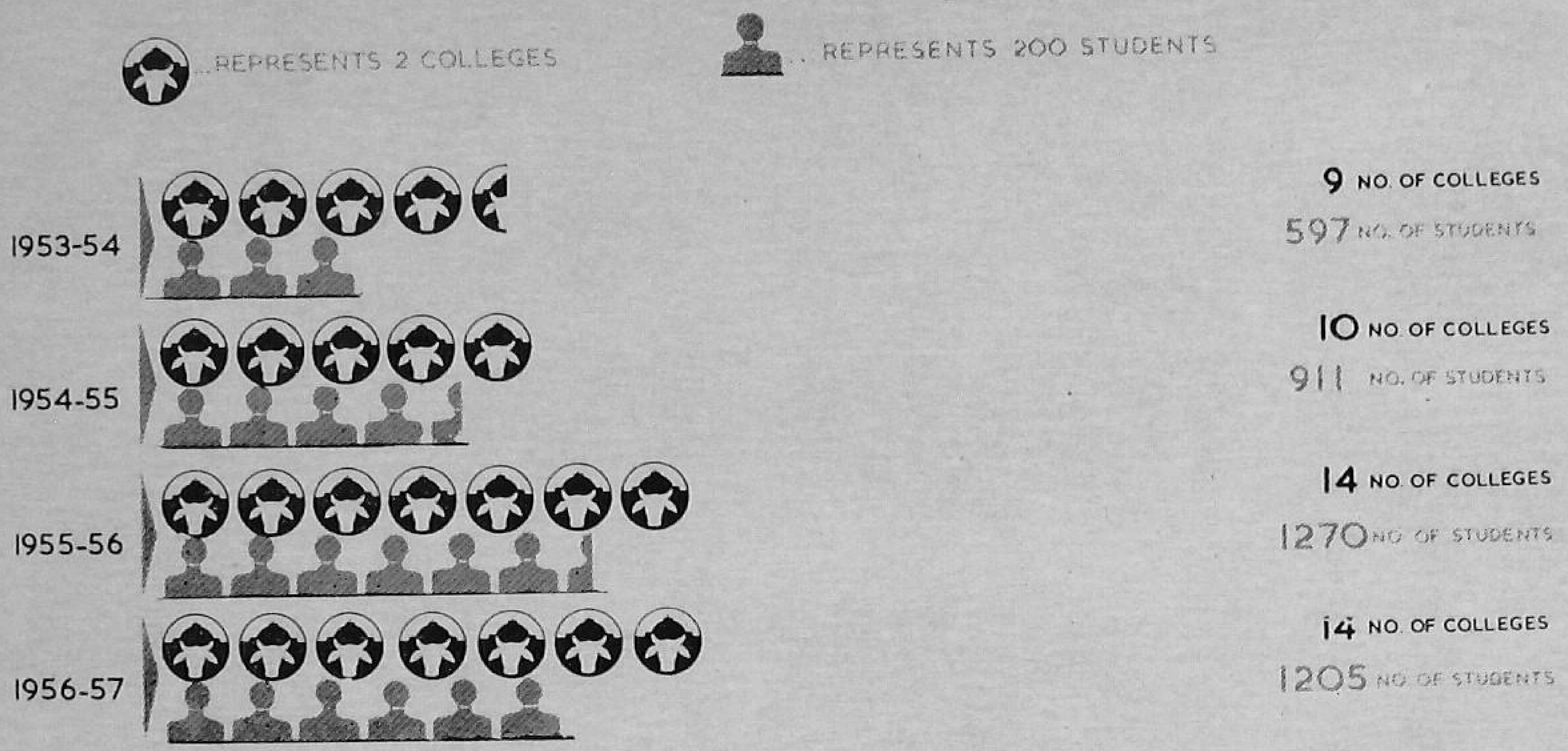
PROGRESS OF AGRICULTURAL EDUCATION IN INDIA

1953-54 TO 1956-57



PROGRESS OF VETERINARY EDUCATION IN INDIA

1953-54 TO 1956-57



3. Assistance was given to the State Governments to expand five existing colleges.

4. Assistance was given to nine State Governments to start a two-year emergency course in veterinary science. It is expected that 2,000 personnel will undergo this course by 1959.

In 1956-57, fourteen veterinary colleges were functioning in the country and 1,205 students were admitted in these institutions, as against 597 in 1953-54.

A total of 1,450 trainees were admitted to the two-year emergency course in veterinary science in 1956.

The Government of India have also taken steps to secure necessary equipment for the different agricultural and veterinary colleges in order to maintain well equipped laboratories, farms and libraries. An agreement has been executed with five Land Grant Colleges of U. S. A. who are now working in cooperation with agricultural research and educational institutions in India, in order to assist these institutions by way of :

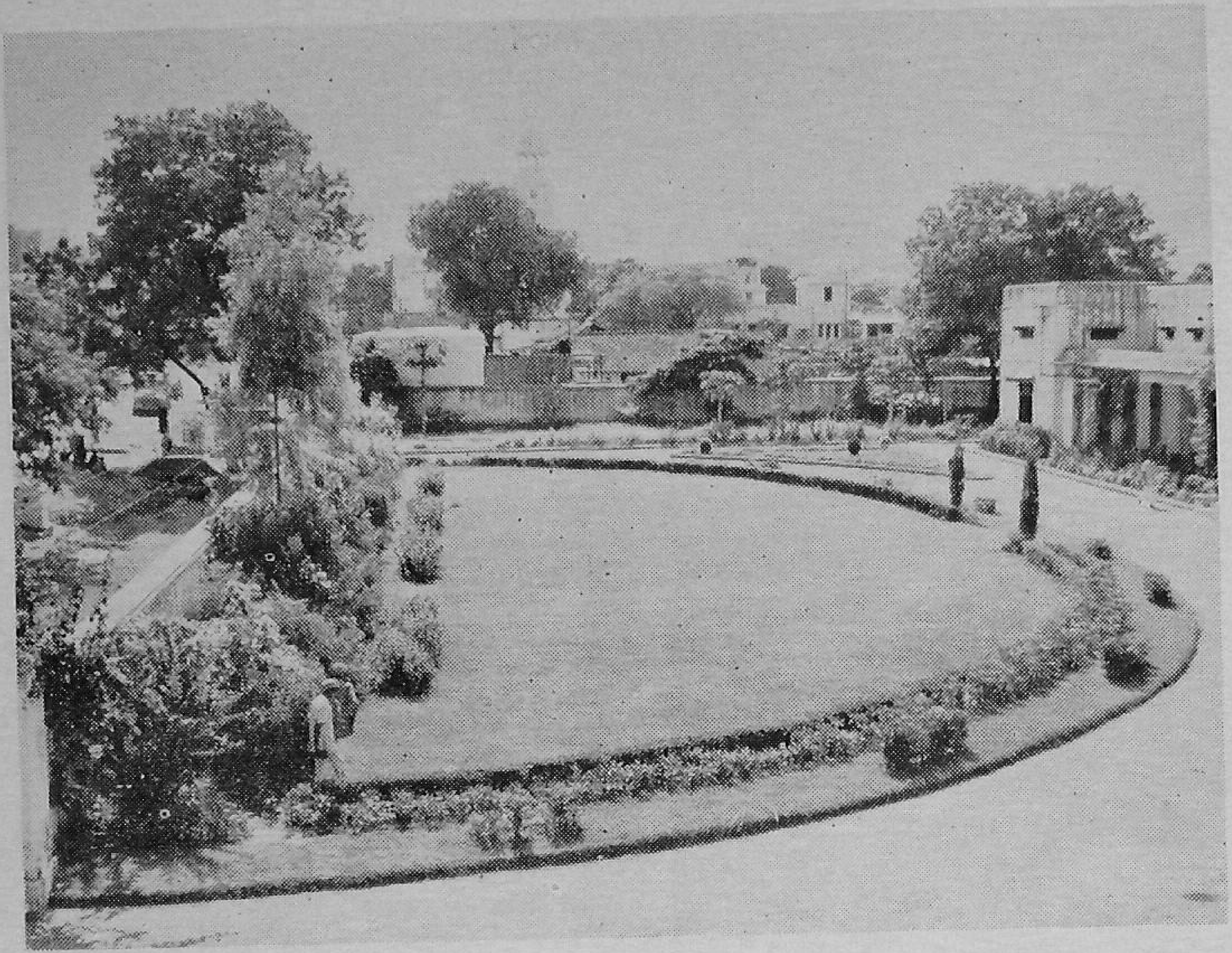
a. Deputing experienced staff members from the American Universities for teaching and research work in Indian institutions;

b. Awarding fellowships to staff members of the Indian institutions for advanced training in U. S. A.; and

c. Supplying technical equipments, books and journals, ordinarily not available in India.

The Government of India has recently appointed an agricultural personnel committee to examine the present position in regard to the supply of trained technical, scientific and administrative personnel and to make a fresh assessment of the requirements during the Second and Third Five Year Plan periods.

The committee will review the present programmes for the expansion of training facilities, and will recommend measures to augment them.



Udaipur

BASIC AGRICULTURAL SCHOOL

Last year the garden of the Udaipur Basic Agricultural School won first prize among government gardens in the city. And this is no mean feat as Udaipur is famous for its gardens and its lakes. This garden is entirely the work of the trainees, who under the guidance of the staff worked hard and gave a gay look to the campus.

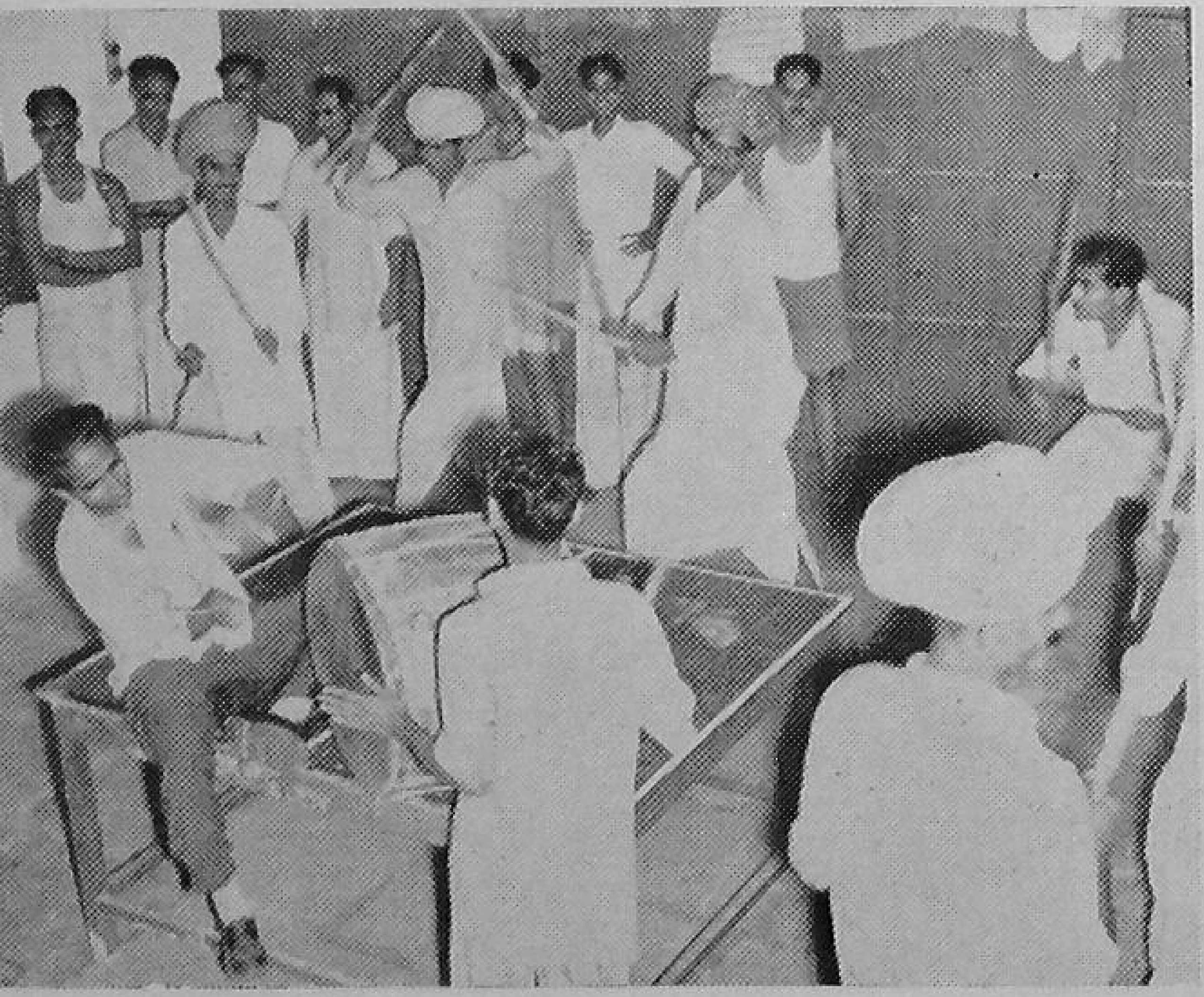
The Basic Agricultural School, Udaipur, was originally established, in rented buildings, in 1954 in Pratapnagar, a suburb of the town. Soon it was shifted to its present premises adjoining the College of Agriculture, on the outskirts of the city. The buildings which the school now occupies were constructed to house the Government Printing Press. They, however, were handed over to the school as the site was found to be the most suitable for the school. The thirteen-acre farm attached to the school is situated just behind the buildings.

When the school authorities took over

the buildings, they were drab and dull without any flower beds or flowering trees. The ground was uneven with many ditches and was full of weeds which were growing unchecked.

But at present the whole scene has been transferred. A beautiful garden, with a spacious 'D' shaped lawn, surrounds the school. The lawn has a hedge border and flower beds are carved along it. Perennials, like hibiscus, lagestromia, poinciata, nerium etc., border the back of the lawn along the compound wall. There is a rosary on the eastern side in which many different varieties of roses are grown by budding and grafting by the students. On the western side there is a nursery. Potted plants adorn the veranda and the porch, while climbing roses and other flowering climbers decorate the pillars.

Trainees harvesting fodder



Trainees practising a folk dance

The school is also rightly proud of its thirteen-acre farm. On these thirteen acres are grown practically all the crops that are cultivated in Rajasthan. This is of a great help to the students who come from all parts of the State.

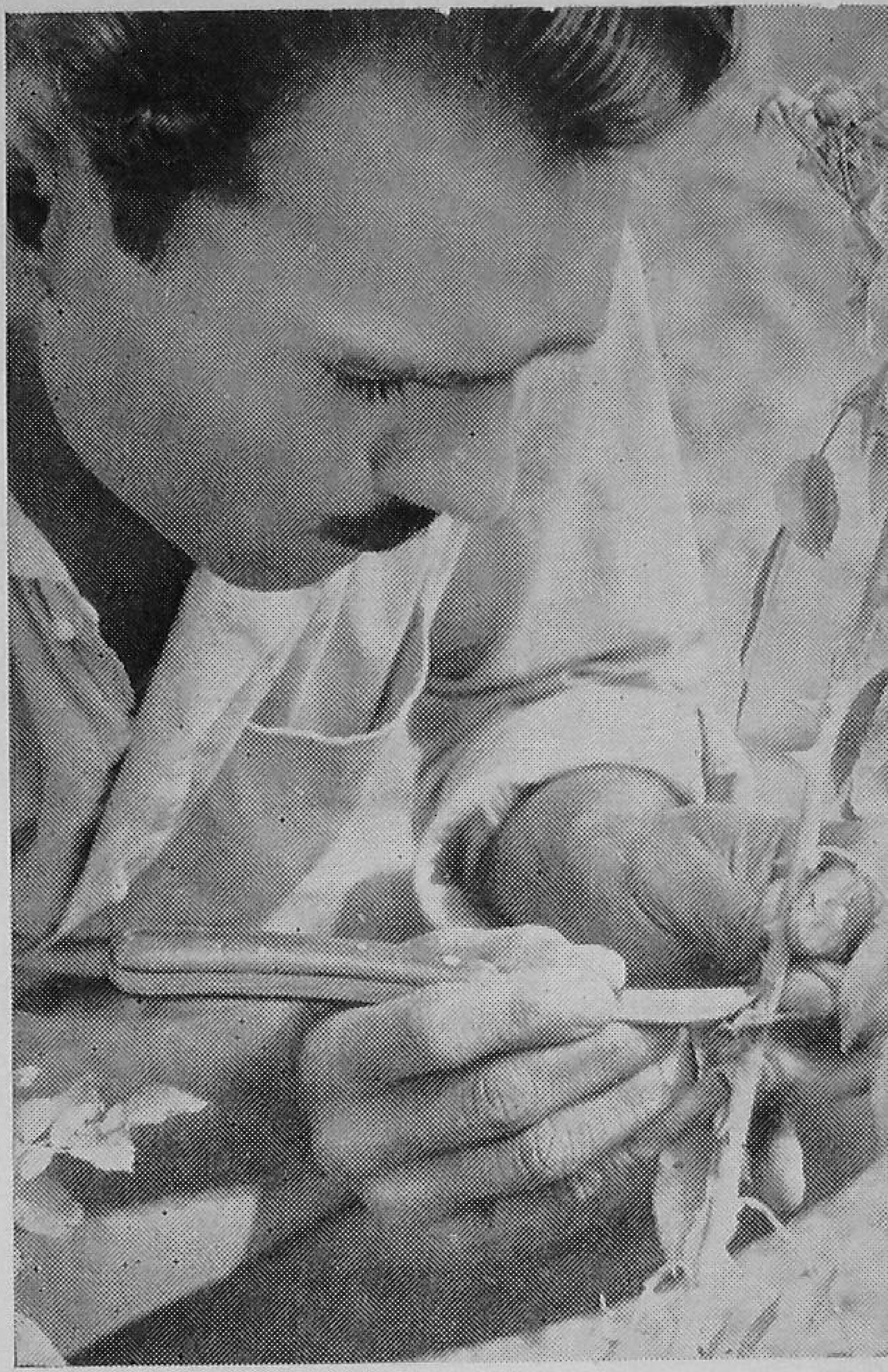
Every student is allotted a plot of one *guntha* (1/40 of an acre) for individual cultivation. As the whole farm has irrigation facilities, every student takes one crop in *kharif* and one in the *rabi* in his plot. Each student cultivates a different crop. The result is that students' plots look like a big crop museum.

Every trainee keeps a detailed record of the crops he cultivates, and the crops cultivated by his colleagues. These records are maintained in crop sheets. Information on the type of the soil of the plot, history of the previous crop, manures and fertilizers applied, seed rate, date of sowing, condition of the crop, date of maturity, date of harvesting, number of intercultivations and irrigations given, presence of crop pests and diseases and their control etc., is entered in these crop sheets by the students.

In this way by the end of the training period, every trainee has with him details of cultivation of about thirty different crops.

A small dairy unit is attached to the school and for studying poultry the students visit the Government Poultry Farm, which is situated only half a mile away.

Demonstrations and lectures by specialists concerning pisiculture, sheep and goat keeping and sericulture are regularly arranged. Recently the Dairy Development Officer gave a talk on cooperative dairy development in Rajasthan; the Collector of the district spoke on targets and achievements of extension work; and the Block Development Officer of the adjacent Block explained the development work carried out in the area to the students. The students go on hiking parties to villages in the Block and make a study of the rural conditions. Recently they organized two agricultural exhibitions in the Block areas.



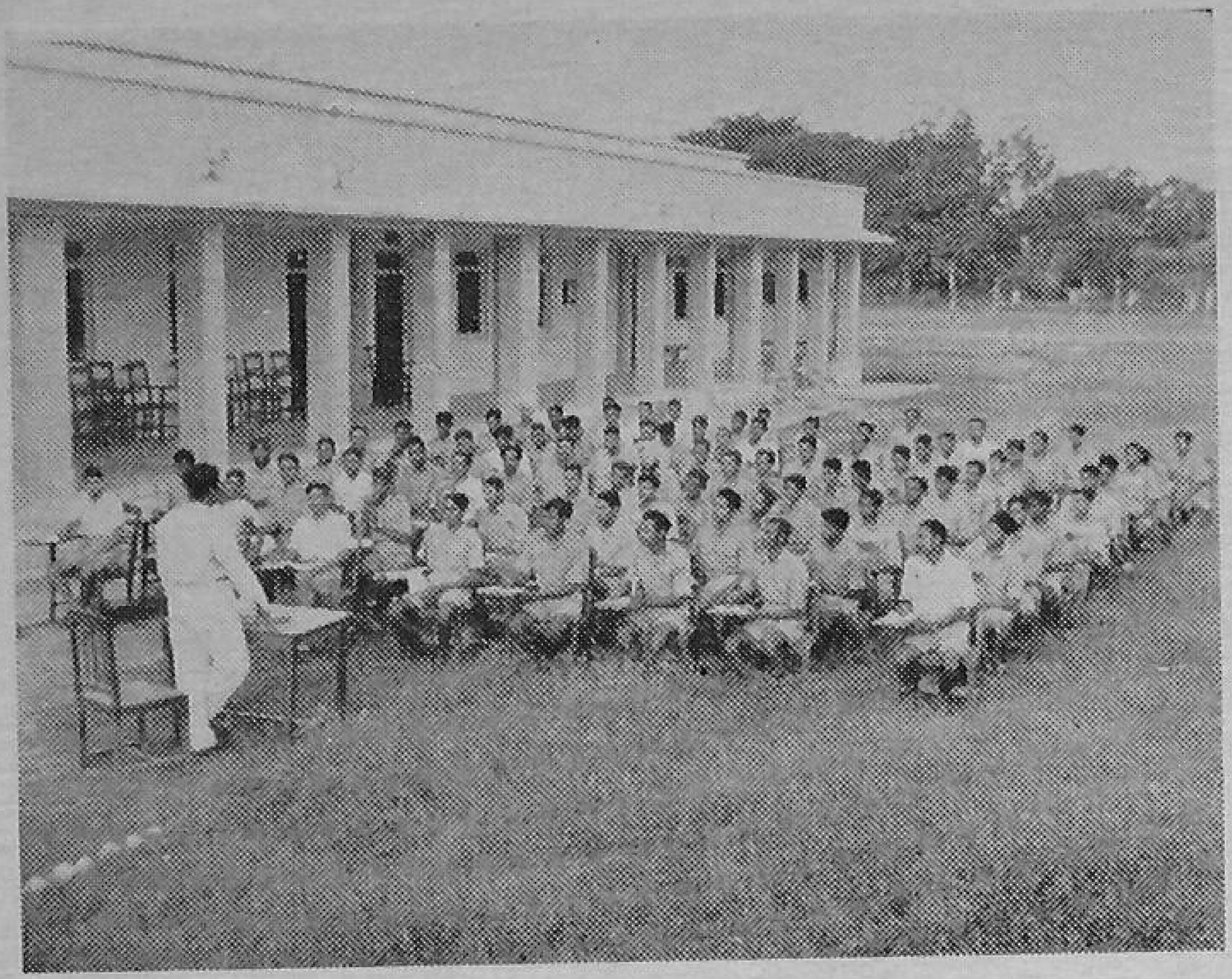
A trainee budding a rose bush

A Gram Sevak trainee testing milk

The students frequently visit the famous gardens of Udaipur and fields of progressive cultivators. Similarly they go on tour to various places of educational interest inside the State as well as those situated outside Rajasthan.

The library of the institution contains 1,400 books. The veterinary, dairy, agriculture and botany laboratories of the school are well equipped to give a thorough practical training in these subjects to the students.

So far 267 *Gram Sevak* trainees have completed their training in basic agriculture from the school.



Sawai Madhopur

BASIC AGRICULTURAL SCHOOL

The picturesque campus of Sawai Madhopur Basic Agricultural School is situated half a mile away from the railway station. The school was initially started in 1949 with the object to train field-men for the Department of Agriculture at a site seven miles from the station. In 1953, the school was converted into a Basic Agricultural School to train *Gram Sevaks* and was shifted to the present location. So far 294 trainees have completed their training in agriculture and allied subjects from this school.

The school buildings, students' dormitories and the staff quarters are located in the seventy-acre farm of the school. A lawn has recently been planted on the open space opposite the dormitories which also forms the prayer square.

A beautifully planned garden is established in half an acre plot on the farm. There is an orchard of citrus, guava, papaya and other fruits on $7\frac{1}{2}$ acres of the farm. This orchard provides excellent opportunities for the students to learn the cultivation of fruits. In summer, a two-acre plot is put under cucurbits and in winter all the vegetables like cauliflower, knolkhol, cabbage, brinjals etc. are cultivated. Similarly all the crops of the region are cultivated on the farm. Every student is allotted one *guntha* of land for individual cultivation.

Trainees of the school using a cultivator

The farm has seven pairs of bullocks out of which two pairs were raised on the farm itself from the young stock of the dairy. The dairy of the school has eight cows of Hariana breed. The students work in the dairy for a day in turn and supervise milking, feeding and care of the animals. A small poultry house was recently built by the students and a few birds are kept there.

The students also work in turn in the vegetable stall of the farm and keep accounts etc. They run a store on no-profit no-loss basis.

All the national days are celebrated by the students and on the annual day of the school a small agricultural exhibition is also organised. Last year over a thousand cultivators from the neighbouring villages visited the exhibition.

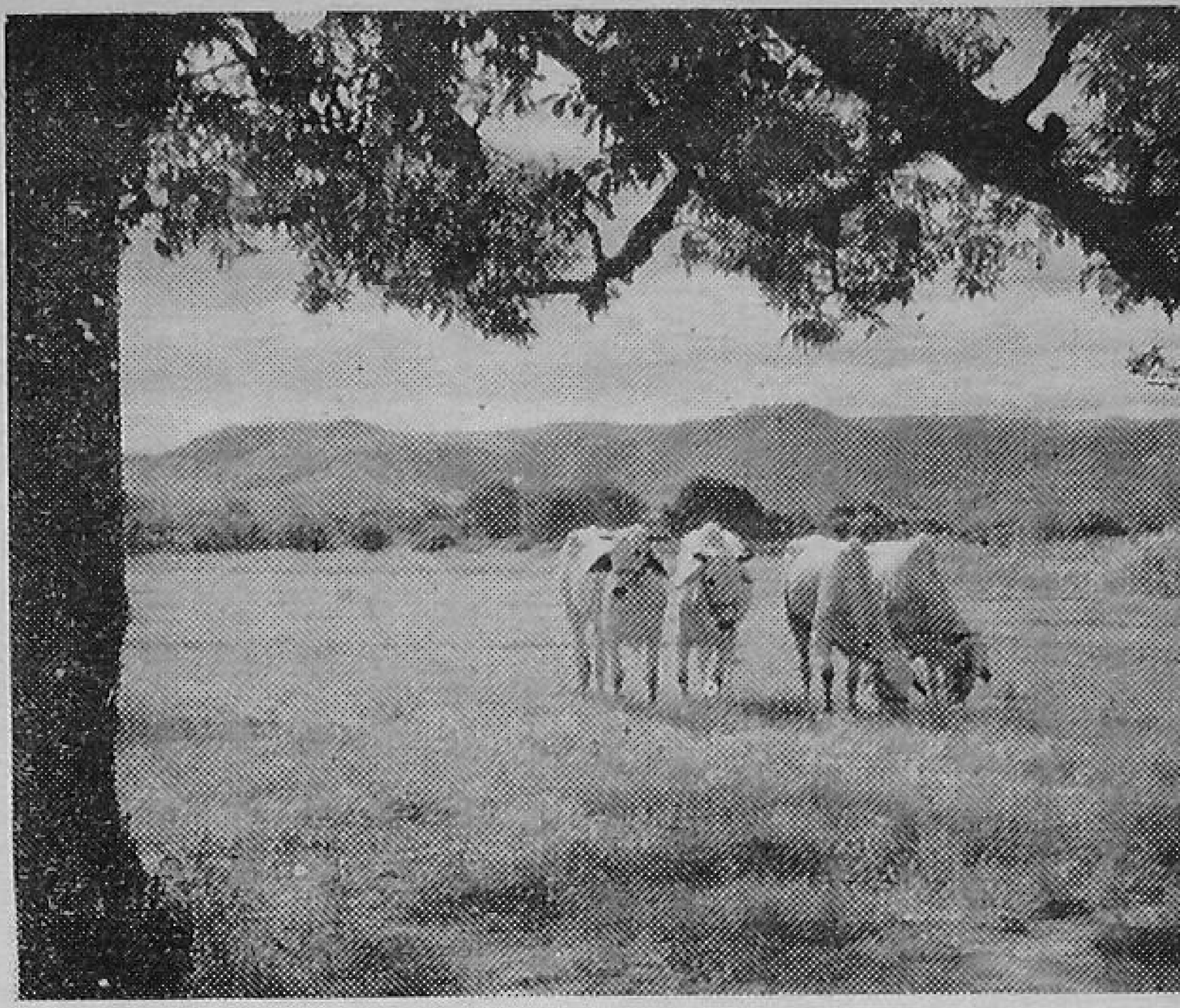
A novel feature of the extra curricular activities of the students here is the annual tournament organized by the school, in which local schools and other Extension Training Institutions of the State participate.

Every saturday morning the students have general practicals in which activities like cleaning the campus, *shramdan* etc. are undertaken.

Recently through *shramdan* the students have constructed a dining hall for their mess and a pavillion on the foot-ball grounds. This pavillion also serves as a stage for the open air functions. The trainees also help the authorities in organizing *melas*, exhibitions etc. in nearby villages.

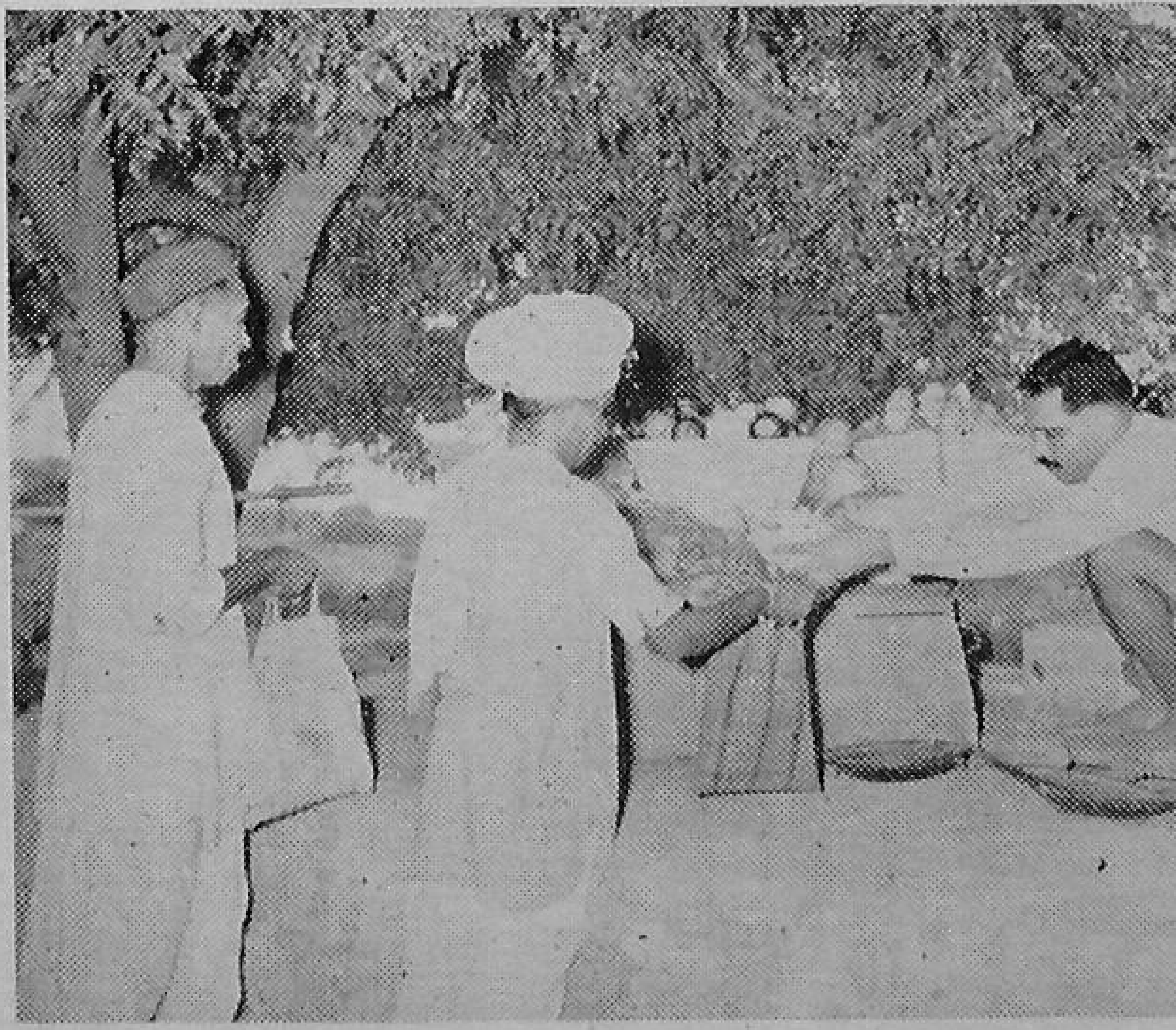
Every Saturday afternoon group discussions on subjects like manures and fertilizers, importance of vegetables etc. are conducted. The students prepare for these discussions by consulting books in the library. They have cultural programmes like *bhajans*, dramas etc. on Saturday nights.

As the students complete the course, prizes are given to those who were best in practical work and social work.



These bullocks were raised on the farm of the school

The vegetable stall



Chandkhuri

BASIC AGRICULTURAL SCHOOL

The Basic Agricultural School Chandkhuri was started in April 1954 to train *Gram Sevaks* for the Community Project and National Extension Service Blocks of Chhattisgarh and backward areas of Madhya Pradesh State. One hundred and forty nine trainees have completed one year's course from the school so far.

The school has a 12½-acre farm attached to it. One acre of orchard has been planted with lemon, orange, mosambi, guava, mangoe, fig, falsa, chiku, pomogranate, amla etc. A nursery of fruit plants has also been established for demonstration purposes and for distribution of seedlings and grafts to the villagers.

In an area of one acre, different varieties of crops, *kharif* and *rabi*, are sown for demonstration purposes. Every variety is properly labelled and trainees regularly visit this crop museum for observing the different stages of growth of the various crops. Crops like wheat, cotton, gram etc. that are not common in the area are also grown here.

In Chhattisgarh, where fodder supply is a great problem for villagers, it is possible to grow perennial grasses, specially in irrigated areas under the command of the canals. Different types of perennial grasses like Giant and Thin Napier, Guinea, Blue Panic, G 305, G 19, Para and Reana are planted to see their comparative growth and adaptability. Other fodder crops like *jowar*, *sunflower*, *cowpeas*, *soyabean* and *maize* are also grown.

About one hundred plots of 20'x20' are laid on the farm for distribution to each trainee for cultivation of vegetables, individually. Seeds and manures are supplied free of cost. The highest yield recorded so far is 8 mds. of vegetables.

A poultry unit consisting of Rhode Island Red and White Leg Horn birds was started in December 1955. The poultry runs and houses were constructed by the trainees themselves.

Recently all the trainees and the staff of the school visited Tekari, a village nearby and stayed there for three days. They participated in *Shramdan* and *Gram Safai.* The trainees gave lectures on crops, diseases etc. with the help of posters, flannelgraphs, flashcards and other visual aids for the benefit of the villagers.

A magic lantern demonstration of the slides on animal diseases, improved agricultural methods etc. was organised. It was followed by recreation and religious programmes like *Ramayan Path*, *Bhajan* and music in which village artists also took part. A village survey was carried out by the trainees.

A *Ramayan Mandal* has been formed at the School in which every day in the evening after prayers, *Ramayan* is read. All the trainees take part and read in groups in turn.

On every Friday a debate is held under the auspices of the debating society. It is compulsory for every trainee to take part in the debates.

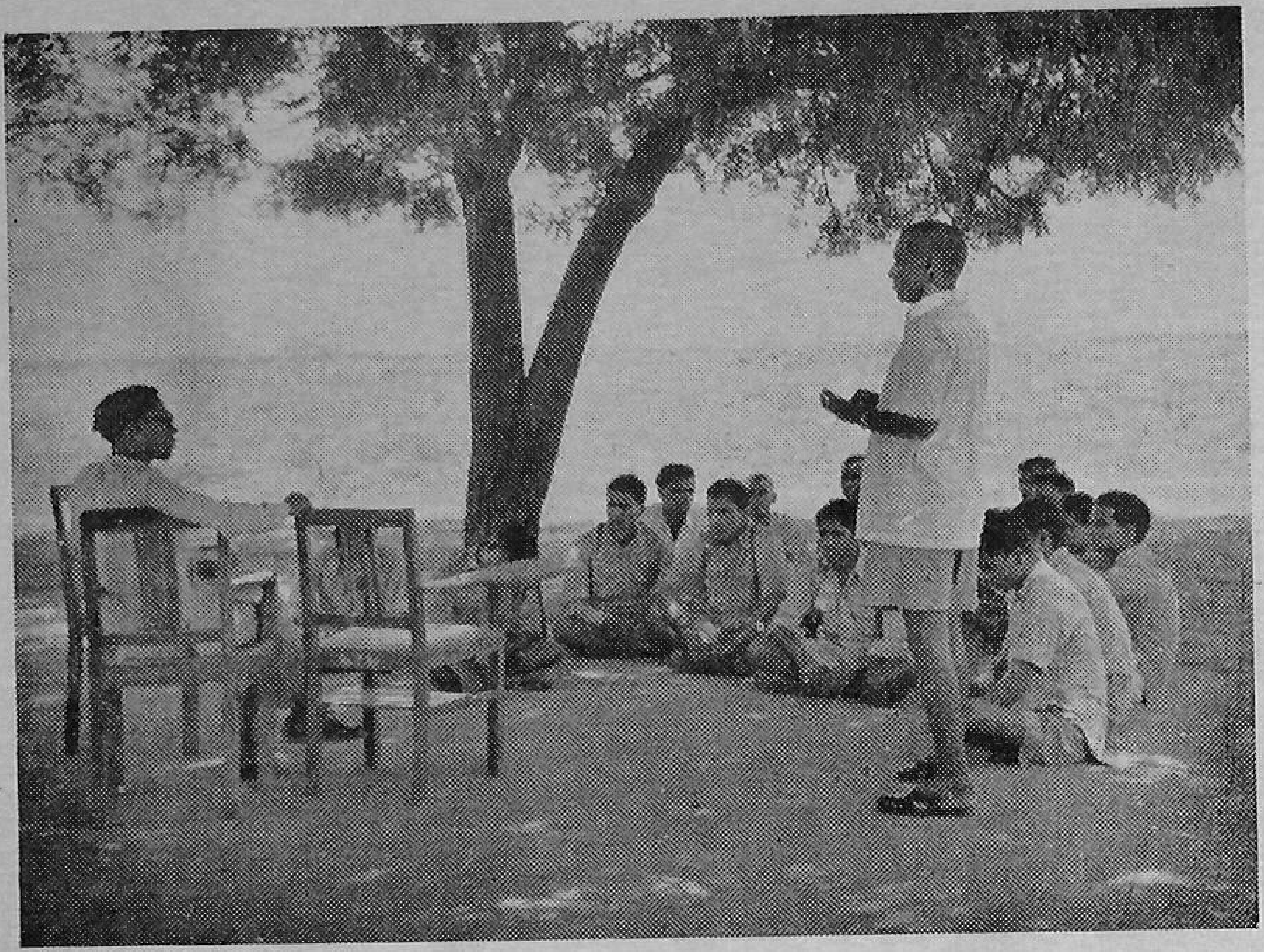
Every Saturday the trainees and their instructors give *Shramdan*, and clean the campus, and do some construction work.

Special lectures by workers in different fields are arranged for the benefit of the trainees. For example the Assistant Project Officers of Kurud and Chandkhuri Blocks recently told the trainees about village problems and the role of *Gram Sevaks.* The Tehsildar of Raipur lectured on village administration and *takavi* etc. The Animal Genticist to M. P. Government told about the advantages of artificial insemination.

The veterinary dispensary of the school attracts a number of animals from neighbouring villages for treatment. Students always get ample opportunities to see various cases and learn the proper treatment.

Trainees also visit the cattle market at *Baradera*, for detecting animals suffering from Rinderpest and carry out vaccination against this disease along with the veterinary staff.

Students of the school helping villagers in constructing a road



A group discussion at the Centre

Diary of a Gram Sevak Trainee

of Erinpura Road E. T. C.

11th June, 1957

We left the Training Centre in the morning. The principal gave us a short talk before we left the Centre. He told us about the aims of our village work. This is our first stay in the village. We will be staying here in Wilodha, for a week. In the months of July and August, we will return here for another two weeks.

This time we have only to conduct a survey and get acquainted with the farmers. We will also be conducting surveys of some selected families to understand their problems. We, however, hope to persuade the farmers to conduct fertilizer and other trials on their farms and select proper sites for the purpose. Next month when we come back we will lay out the trial plots.

We reached Wilodha late in the evening after walking a couple of miles from Sarunagar, the nearest railway station. We are four of us, Ramchandra, Kalyani, Baburao and myself. The *Gram Sevak* in whose area this village is situated was waiting for us in the village. He has made arrangements for our stay in the village school. We have brought our own rations and utensils with us. We will start cooking from tomorrow. We dined with Mohanlalji, a farmer. It was indeed kind of him to invite us strangers to his place.

12th June, 1957

We have taken in hand the village survey. Wilodha has barely 400 houses. The *Gram Sevak* gave us great help in conducting the

survey. He introduced us to the villagers. He left the village today for Srirampur—his headquarters.

In the afternoon, we started the family survey. First, we contacted Mohanlalji and collected statistics about his family, his yearly budget etc. He has a twentyfive-acre farm. We went to the farm with him. The fruit trees planted by him show very poor growth for their age. The plot is full of weeds. We found that Mohanlalji has not manured the plot at all. He agreed to put in some farmyard manure and keep the plot properly cultivated and clean. He also agreed to grow a green manure crop.

We then went to Shri Waleg. He complained that the development activities do not percolate down to his level. All the benefits go to those in the upper strata. We found that he was not enthusiastic about the programme. His complaint was that the *Gram Sevak* did not come to him often and request him to follow this method and that he was too proud to go to the *Gram Sevak* himself. We told him that it is physically impossible for the *Gram Sevak* to meet often every cultivator in his circle. We also told him that the *Gram Sevak* will definitely help him if he knew that Waleg needs help. Shri Waleg understood the point. We are going to conduct a fertilizer trial in his plot.

Afterwards we conducted a survey of two more houses. While we were returning to the school, we saw two peasants working in the field. We went to them and asked their names. But they refused to talk to us. For about half an hour, we tried in vain to open conversation with them and to get their names. We could gather from their talk amongst themselves that they took us for some government officials and suspected that we wanted to implicate them in something. Finally we had to leave them at that.

It is obvious that winning their confidence is not going to be easy.

13th June, 1957

We went to Jetha Singh's house in the morning, and collected statistics about his family. He then took us round his farm. The well on his farm is not deep enough to provide adequate irrigation. It has solid rock at the bottom. Because of this, Jetha Singh was not able to deepen it. We told him to approach the District Irrigation Board authorities who maintain a rock blasting machine for this purpose.

• After completing the survey of two more families we went to Meena Colony. We found that all the men had left for work. We tried to speak with the women but they could understand neither Hindi nor Marwari. They simply stared at us and laughed. We left the colony immediately. How can we

Village women from the area

Cement concrete *jalees* being used as ventilators in a village house

Trainees working on the farm of the Centre

work with them if they cannot understand what we speak and we cannot understand their language.

In the evening we went to the adult literacy class, which is held in a potter's house. A *Meghwal* youth conducts the classes. Quite a few *Kumhars* and *Meghwals* attend the school. After the school hours we had a nice chat with the adults, mainly about the extension programme. We can contact many people and win friends at the school.

14th June, 1957

This morning we went to Biramji's farm. He has twentyfive acres of dry land. He can take only *kharif* crops. Biramji's family is really large, and fifteen persons are dependent on him. Biramji's farm has a good situation. It is on the main road, which goes to Sumarpur. We persuaded him to lay out a fertilizer trial on a piece of land near the roadside. He also agreed to dig compost pits after the rains.

The next family we contacted was that of Vardaji. He is a landless labourer. He and his family members work on somebody else's farm. Their economic condition is very bad. Vardaji has undergone training in a crafts centre, but he said he had no capital to start his own business. We could do nothing to help him, except expressing our sympathy.

In the evening Doctor Sahib, our instructor, came to the village. We discussed our work with him. He asked us to discuss the day's work amongst ourselves every night. We told him that we were already doing so.

15th June, 1957

We have now decided the farmers and their families on whom we should concentrate our attention. Doctor Sahib yesterday approved of the list. He has told us to give more thought to sanitation, nutrition and public health side of the programme during the last two days.

All the families in the village with whom we are working are non-vegetarian. They consume very little of green vegetables. Their children do not take a bath daily. Pools of stagnant water are common around the houses.

The houses, which are mostly mud huts, are ill ventilated. Their walls have been blackened with smoke. All of them have accepted to open up ventilators in the walls. Next time when we will come here we will bring cement concrete *jalis* prepared by us in the Centre.

We helped the villagers in cleaning the surroundings of their homes in the afternoon.

16th June, 1957

Today is the last day of our fiirst stay in the village. We will leave this place at 4 o'clock tomorrow morning. We will be coming back next month.

Most of the day we were bidding good bye to the villagers, who are now our friends. We have prepared a list of all the cultivators who have promised to lay out fertilizer trials. Similarly, We have already chalked out a rough programme for our next stay in the village.

In the evening we asked the villagers to join us in singing *bhajans*. Ramchandra and Kalyani, both of them have a very good voice. The villagers enjoyed the programme and we retired at twelve in the night.

A class in progress at the Centre

Pusa

BASIC AGRICULTURAL SCHOOL

The school was started on 19th August, 1953 and is located in the Central Sugarcane Research Station Farm, Pusa. So far 432 trainees have completed training from this school.

The school is located 24 miles away from Muzaffarpur and a separate farm of 8.75 acres is attached to it.

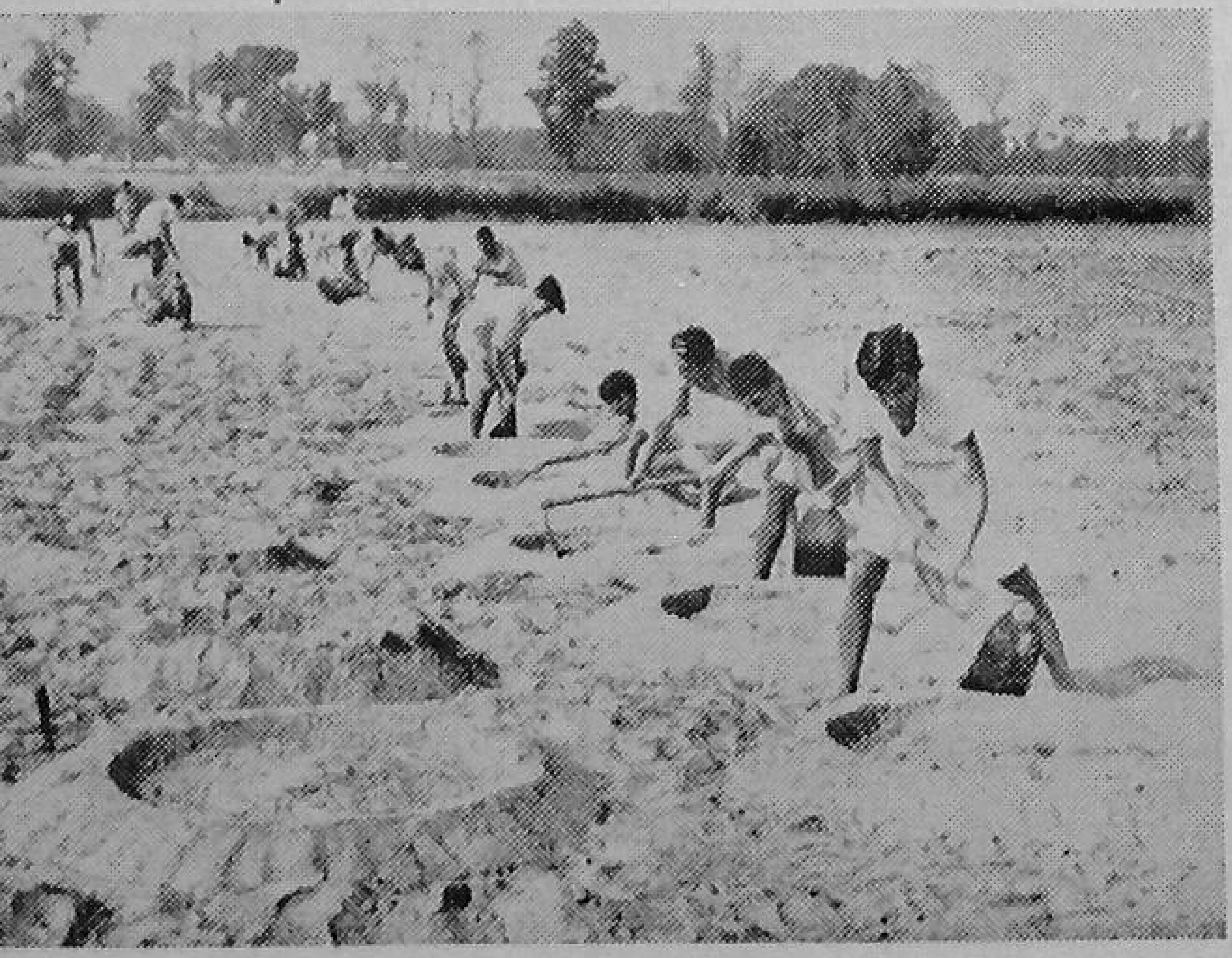
The boys are divided into four groups for the purpose of practical training in Agriculture and Animal Husbandry and Veterinary.

The trainees are sent to the main Sugarcane Research Farm, the Botanical Sub-station, the Hucca and Chewing Tobacco Research Station at Pusa, for further practical training.

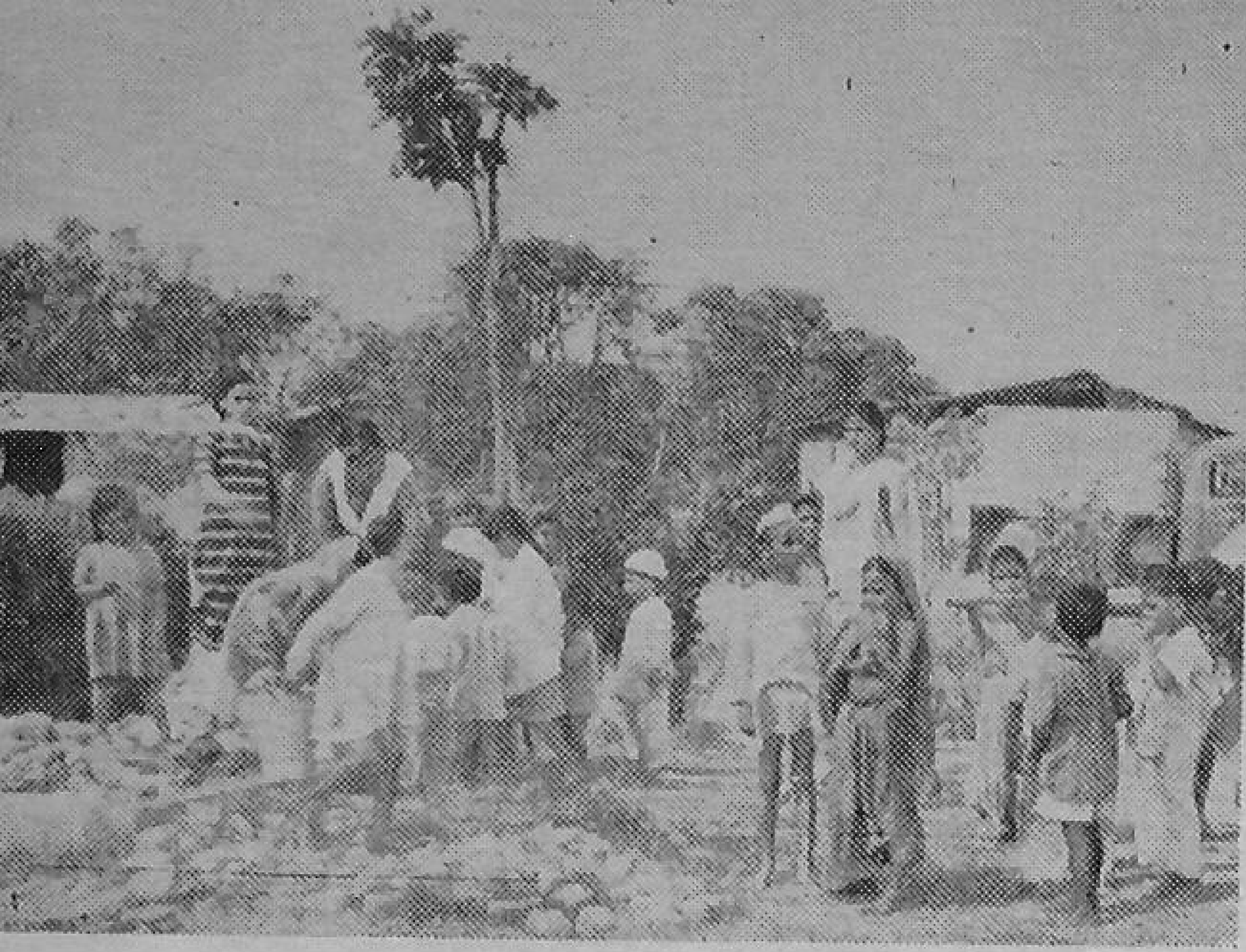
The school is a part of the Agricultural Department of Bihar. The Superintendent is the head of the Institute and is assisted by three lecturers, two field instructors and one mechanic in teaching the students.

The boys lead an ideal community life in the hostel. They manage their kitchen affairs by appointing different committees and electing office bearers. These jobs are rotated and every body shares the responsibility. A batch of five students, which changes daily cooks food for the entire community. Cultural programmes are frequently organized, in which the staff members also participate.

Trainees preparing beds for planting cucurbits



Intercultivating sugarcane



Gram Sevika trainees of Kotah with the children of Lakhawa

Lakhawa Village Changes its Ways

— **V. Bhandari**

Last year villagers of Lakhawa sold Rs 8,000 worth of wheat and paddy, which they had grown for the first time, while these crops failed in the neighbouring areas due to lack of rain. This they had been able to do by using water from the tank, which they had repaired themselves for irrigation.

Lakhawa is a hamlet with a population of hundred and fifty people, situated nine miles away from Chatterpura, Kotah. The villagers kept cattle and used to roam about in search of pastures. They earned their living by selling milk and milk products and firewood which they used to collect from the jungle. The villagers never practised agriculture and the land remained fallow. When the trainees of the Kotah Extension Training Centre came to the village for the first time, they helped the villagers in constructing a fair weather approach road.

The trainees found that an old tank existed in the village, which was silted due to neglect. Water seeped through the crumbling walls. Nobody knew when this tank was constructed. The villagers had not realised the full value of the tank.

The *Gram Sevak* trainees held a series of discussions on the better utilization of the tank water with the villagers. Bali, a middle aged woman, took great interest in these discussions. With her help the trainees persuaded the villagers to undertake the repair of the tank. The villagers and the trainees worked together and de-silted the tank, mended the walls, and stopped the leakage of water. Soon the tank was full with rain water. The villagers reclaimed the fallow land. Seeds and fertilizers were supplied by the Block authorities. The result: paddy and wheat worth Rs. 8,000 was sold by the villagers in one year.

When I visited the village recently, the villagers were constructing new huts. Piles of stones were collected to convert the fair weather approach road into a *pucca* road. A primary school with twenty children was functioning with the help of the *Gram Sevak* trainees. The *Gram Sevika* trainees of Kotah were organizing a *Balwadi.*

Bali told me, she was keen that the children should learn to read and write. They wanted to organize a *Mahila Mandal,* but first they were constructing houses and settling down. They need not wander like nomads any more.

This is just the beginning. One can easily see that the villagers have a new self-confidence. With their own hands they have achieved what they thought was impossible.

A USEFUL WINNOWER

By

P. N. PANGOTRA

Winnowing i. e. the separation of chaff from grain, is one of the most important operations in agriculture. At present in India, most of the winnowing is performed by taking advantage of natural breeze. When there is a strong breeze, the operation can be successfully performed but it often happens that a farmer has to waste a good deal of time as there is no breeze. Winnowing has to be completed within the shortest possible time, because if there is bad weather the produce may be completely spoiled.

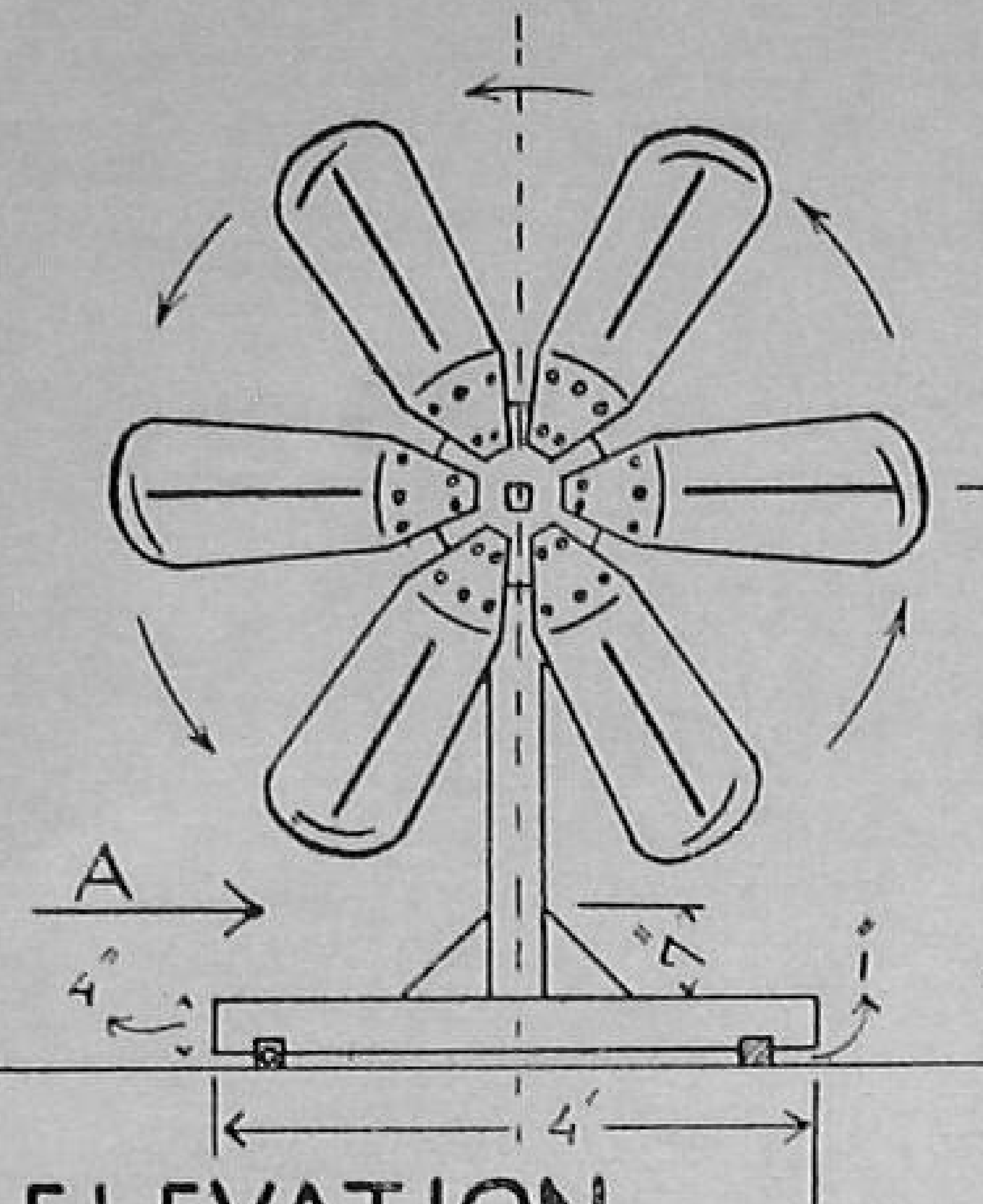
Of the improved agricultural implements introduced and accepted by the Indian farmers, winnowers form an important part. But even now, due to the high cost, they have not become very popular. A full-fledged winnower costs nearly Rs. 500/- and therefore, is not within the reach of ordinary farmers. For the last one decade, various efforts were made to improve winnowing fans and manually operated fans were produced but here again the question of cost came in the way of their popularisation. These fans utilised the mechanisms of gears, chains and sprockets, V belts, flat belts and rope pulleys. Some of them were worked by hand and others by feet using a bicycle-like arrangement. The cost of these fans ranged from Rs. 150 to Rs. 50.

After the establishment of the Agricultural Workshop Wing at Nilokheri, the need for designing a simple and cheap winnowing fan was realised and the work was taken in hand. Various models were prepared and the simple winnowing fan described in this article was produced and tested. The members of the staff of the agricultural workshop as well as the trainees helped in producing this fan. The fan has been tested not only at the farm attached to the Extension Training Centre but also on the farms of private farmers, and it has been found to be both economical and useful.

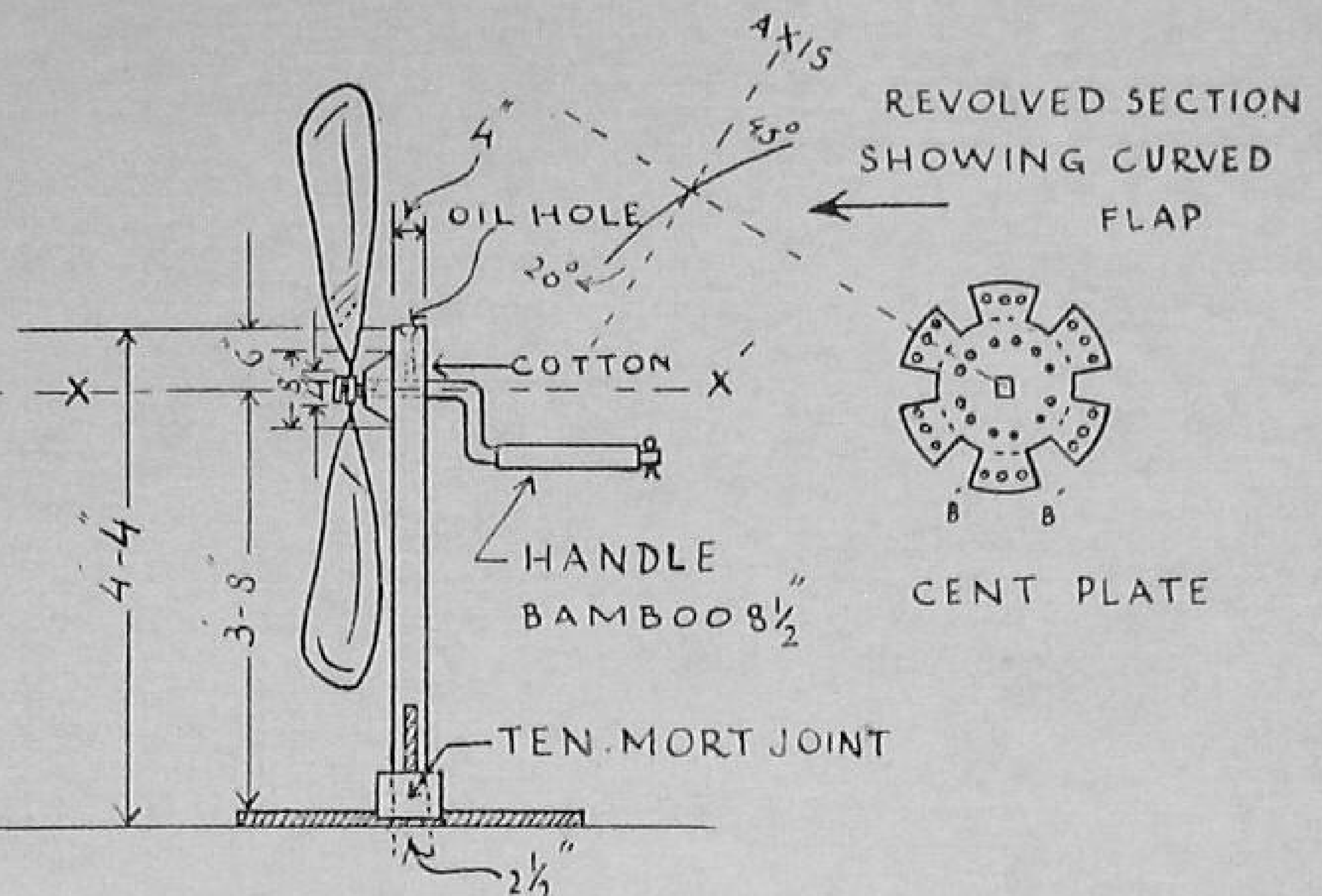
The fan consists of six blades fixed to a central plate with an axle and handle attached to it. The axle is placed on a wooden stand. The diameter of the fan is such that two persons can winnow the grain at a time, thus making it more economical than other fans available in the market. The fan can be worked by a labourer without any difficulty. An oil hole is provided for lubrication.

The cost of the fan comes to Rs. 30 including the labour and material charges. The normal speed of the fan is 60 revolutions a minute and it can winnow about 25 maunds of threshed material per hour. The fan can be used on a co-operative basis by the villagers. The fan is very simple in construction and has no gear, chain, sprocket etc. It can be easily repaired by the village carpenters and black-smiths and can be prepared out of material available in the villages. Because of its winnowing efficiency, less cost, simplicity of operation and construction, it is hoped that it will become popular in the Indian villages.

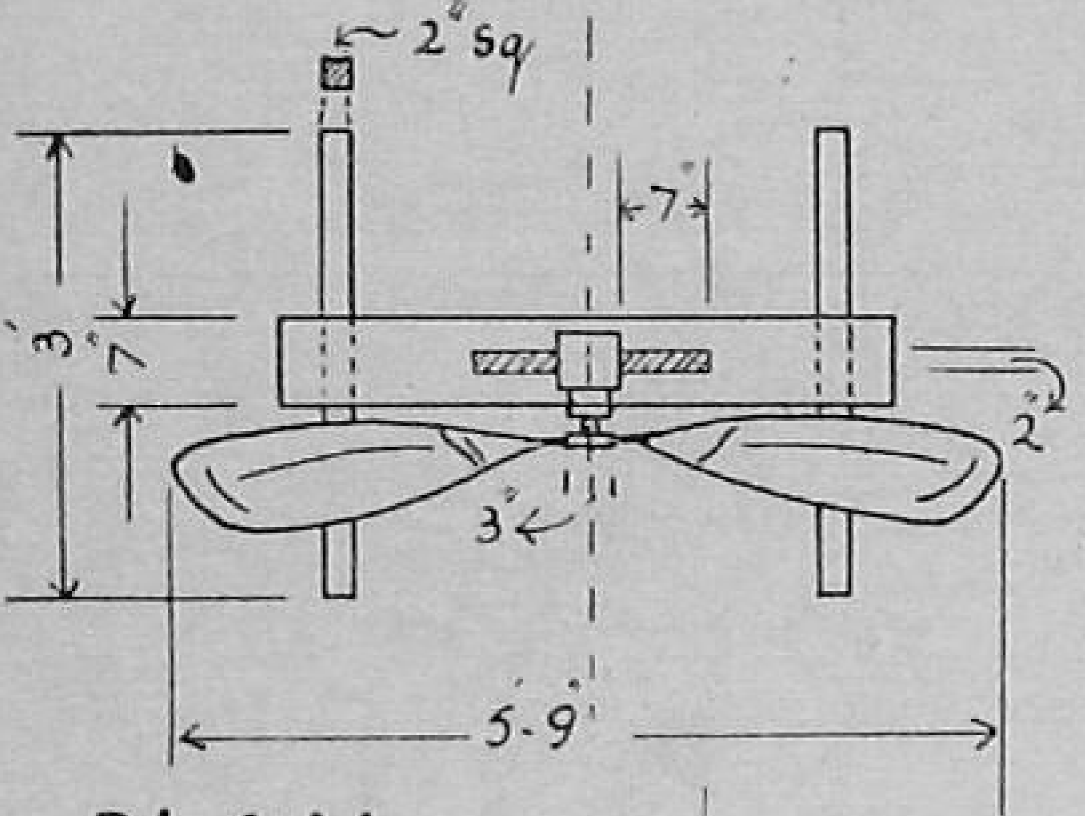
NILOKHERI WINNOWER



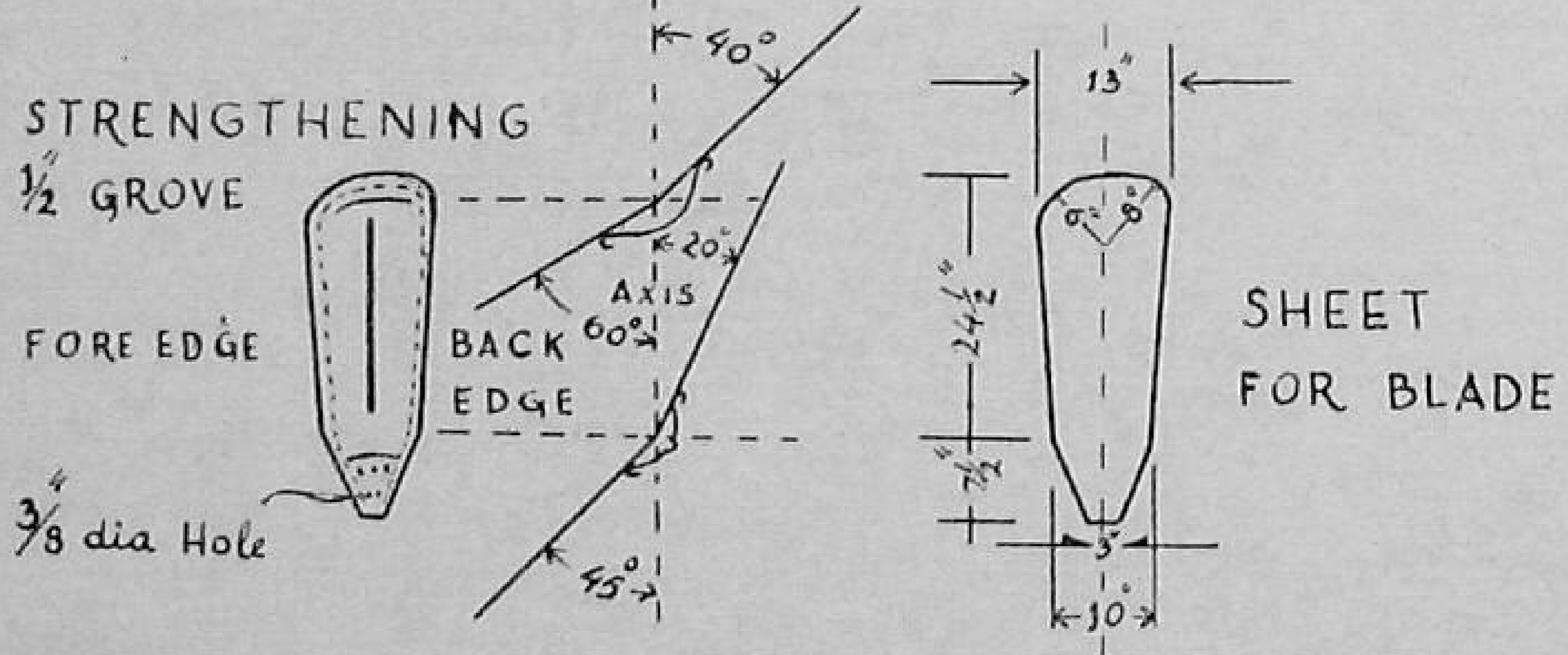
ELEVATION



VIEW ON → A

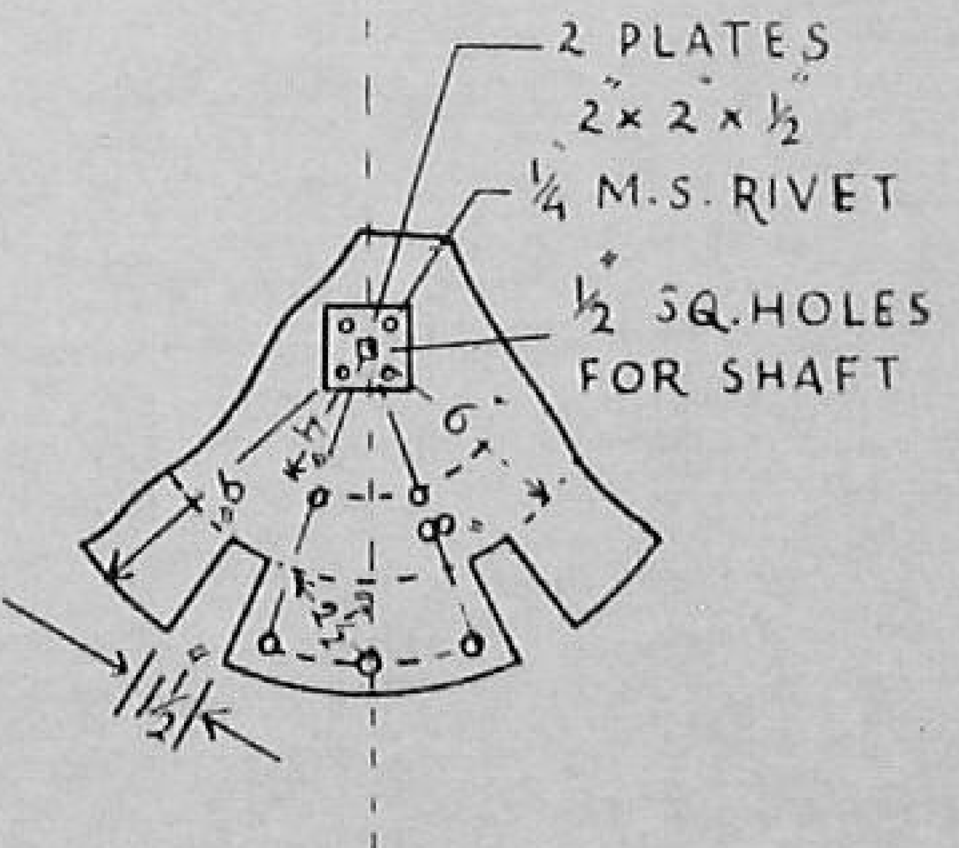


PLAN

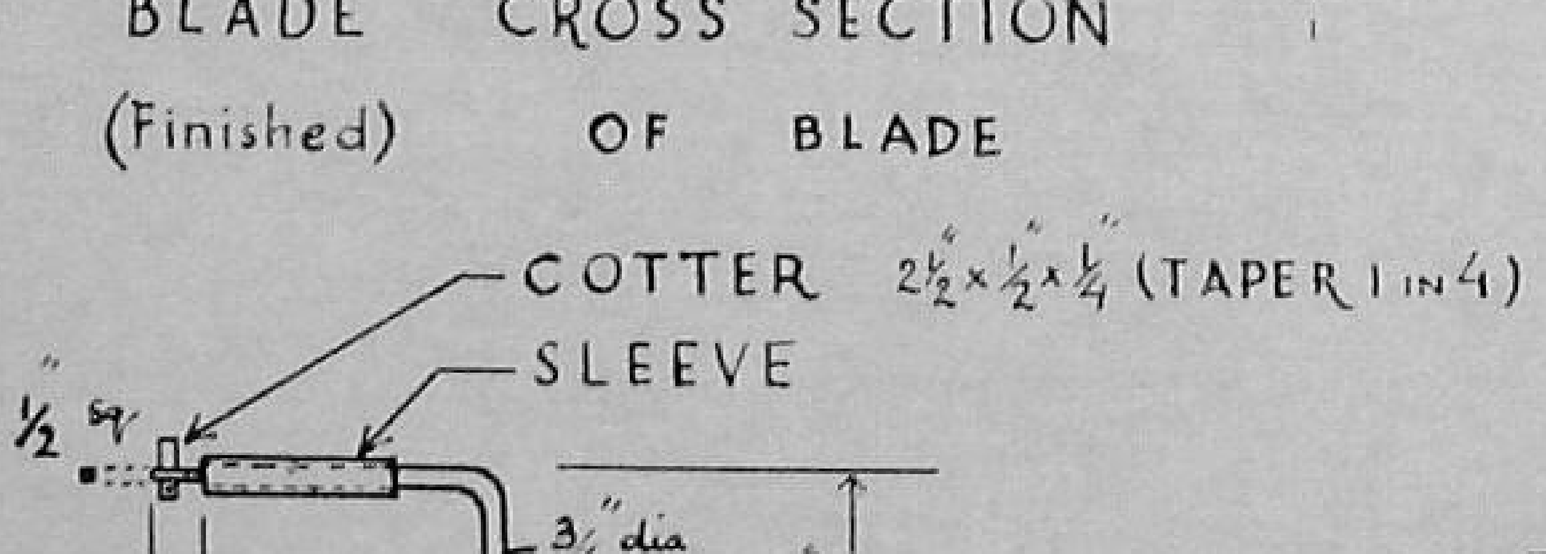


BLADE (Finished)

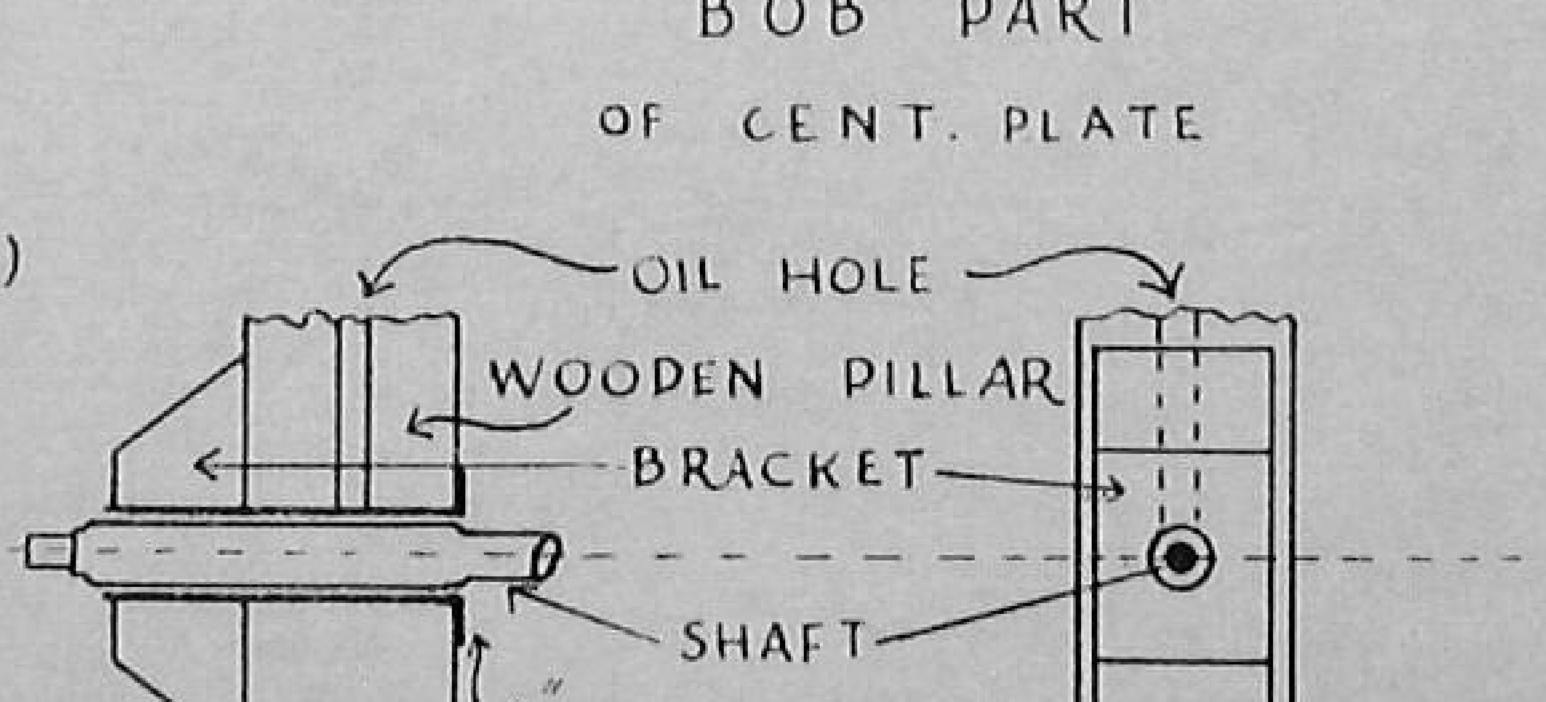
CROSS SECTION OF BLADE



BOB PART OF CENT. PLATE



CRANKED SHAFT

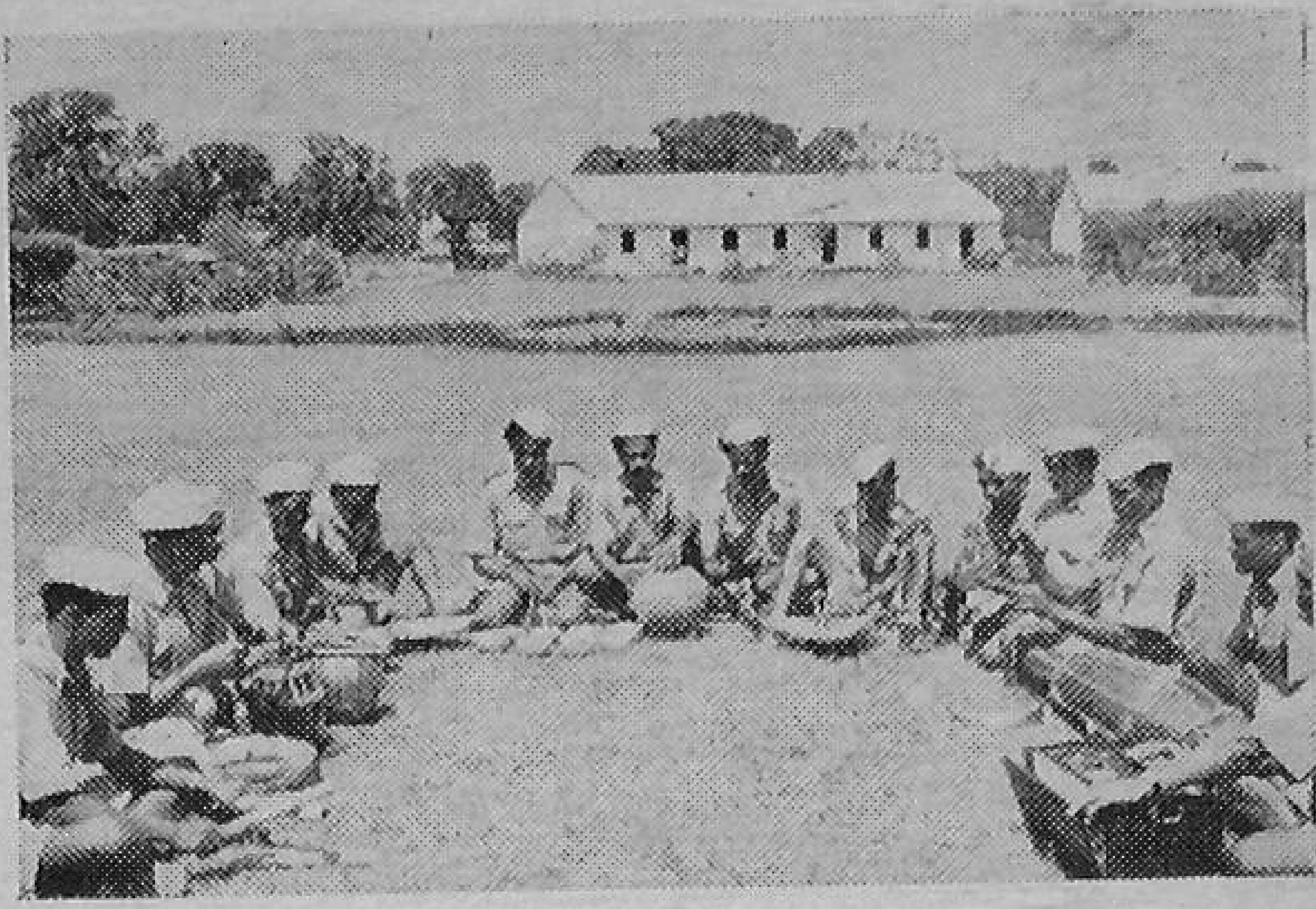


SHAFT AND BEARING (BUSH) (N.T.S)

WOMEN'S CORNER

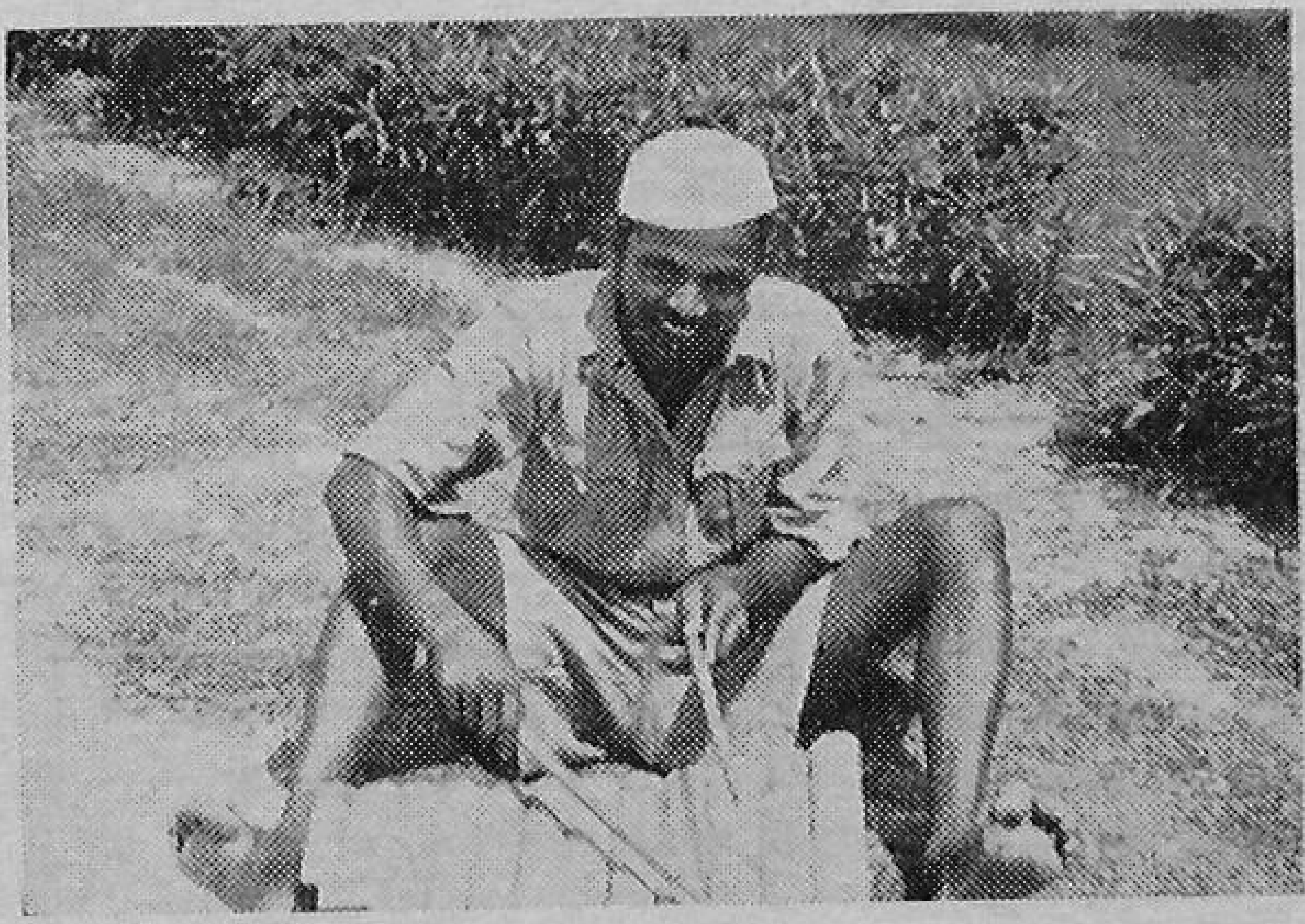
A RHYTHM BAND AT MUSHERI FARM, BIHAR

—PATSY GRAVES



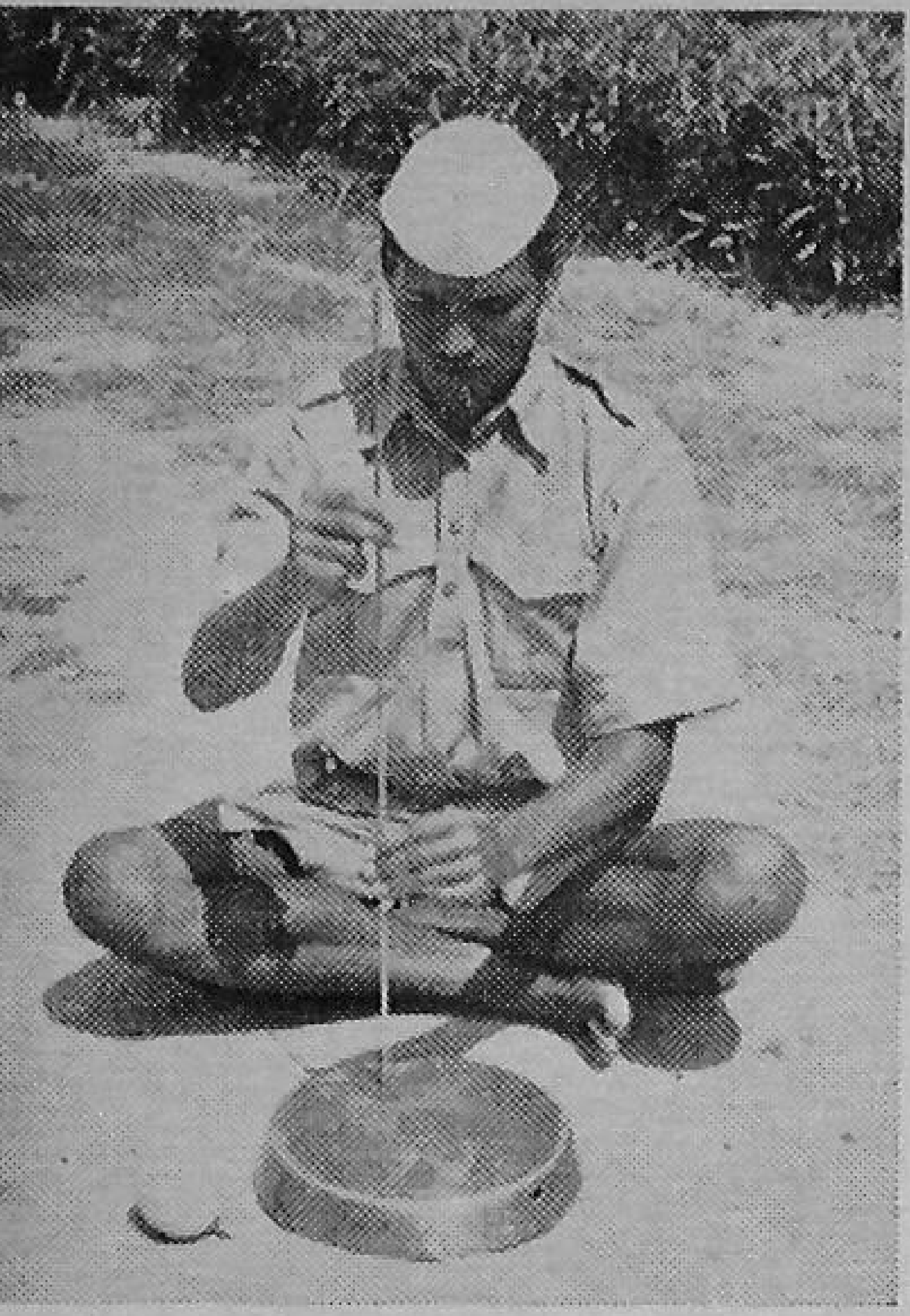
The Band with harmonium, khol and tabla

One of the problems faced by *Gram Sevikas* in villages is to plan worthwhile activities for children and youth without the expenditure of funds. This rhythm band seems to be an idea that could be used for this purpose, and could also be utilised for recreation of the *Gram Sevika* trainees at the Centres.

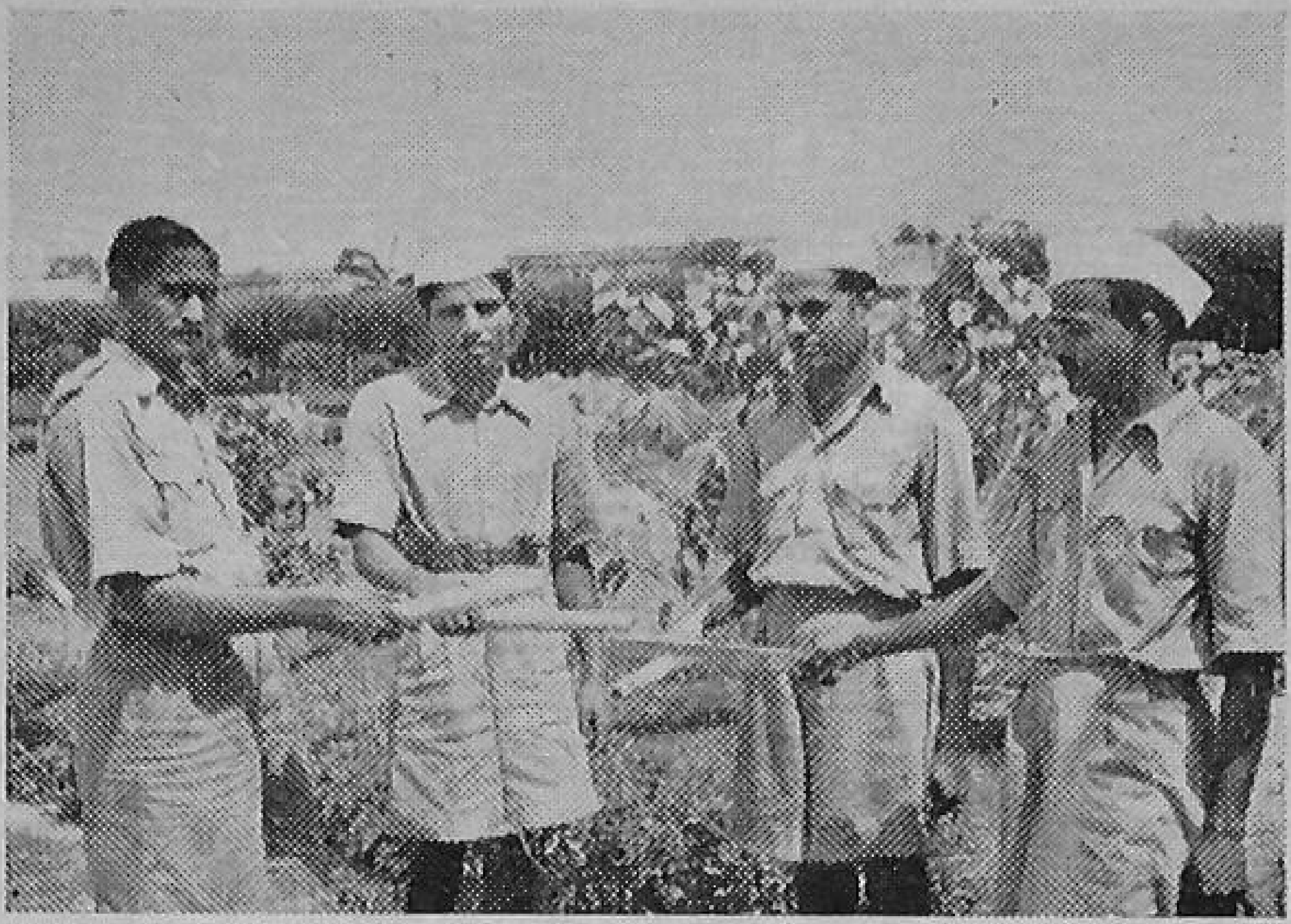


Graduated strips of bamboo and teak strung and held between the toes. They are beaten with sticks like a xylophone

Khanjuri made of wood and pieces of metal, giving a sound like castanets

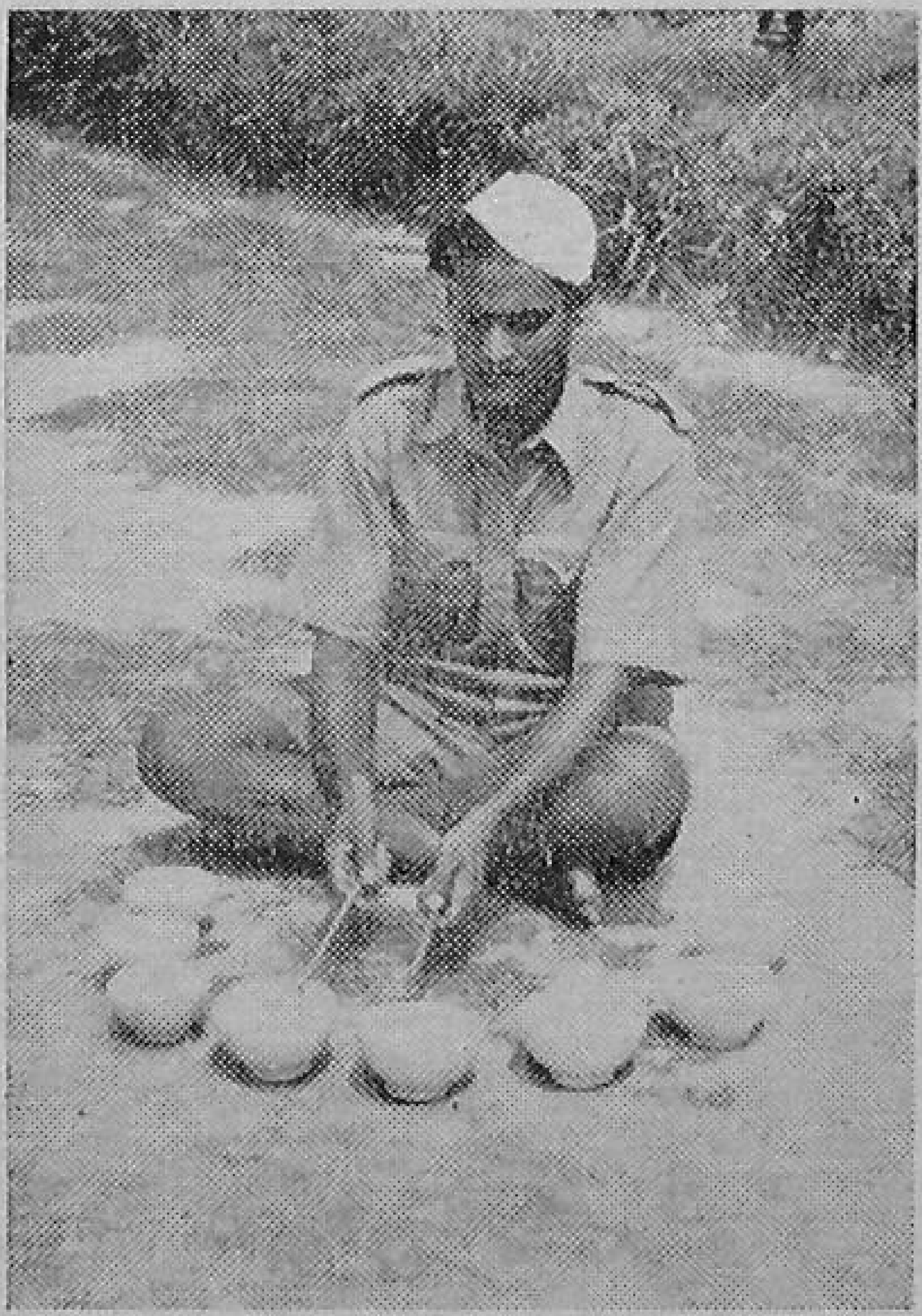


Brass plate and a moistened stick will supply the bass

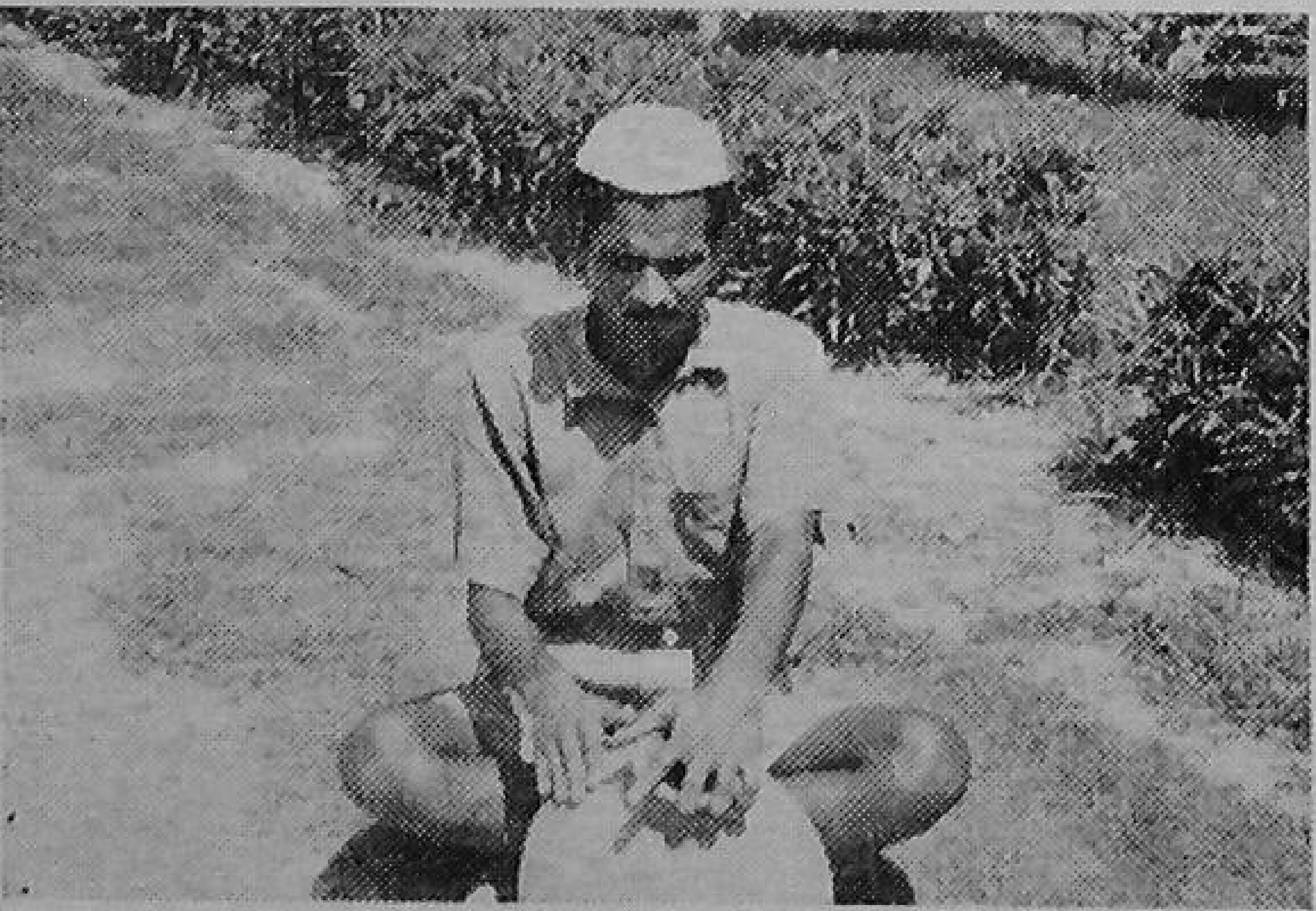


Bamboo sticks beaten in rhythm

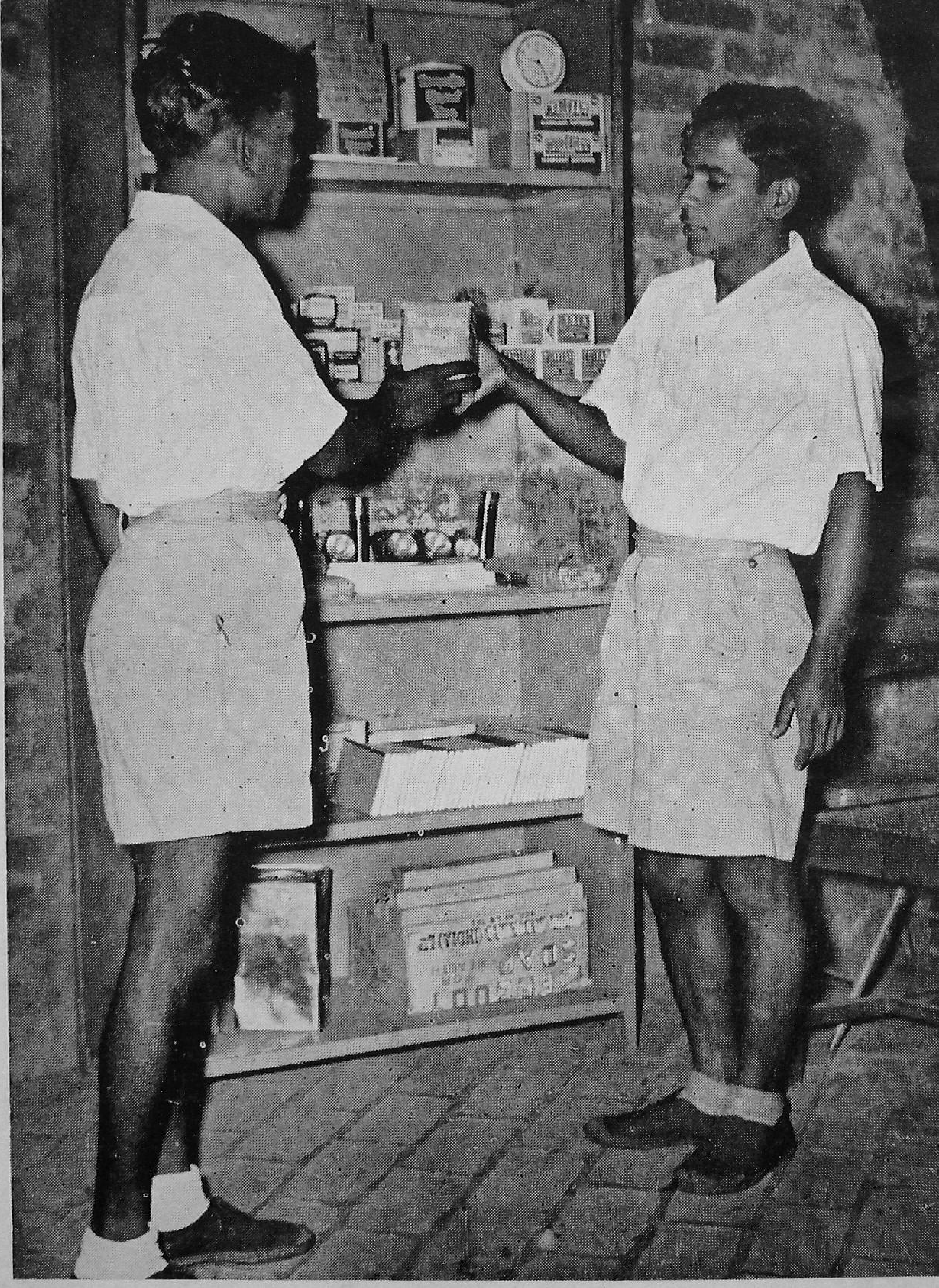
The top of a hooka filled with tiny stones



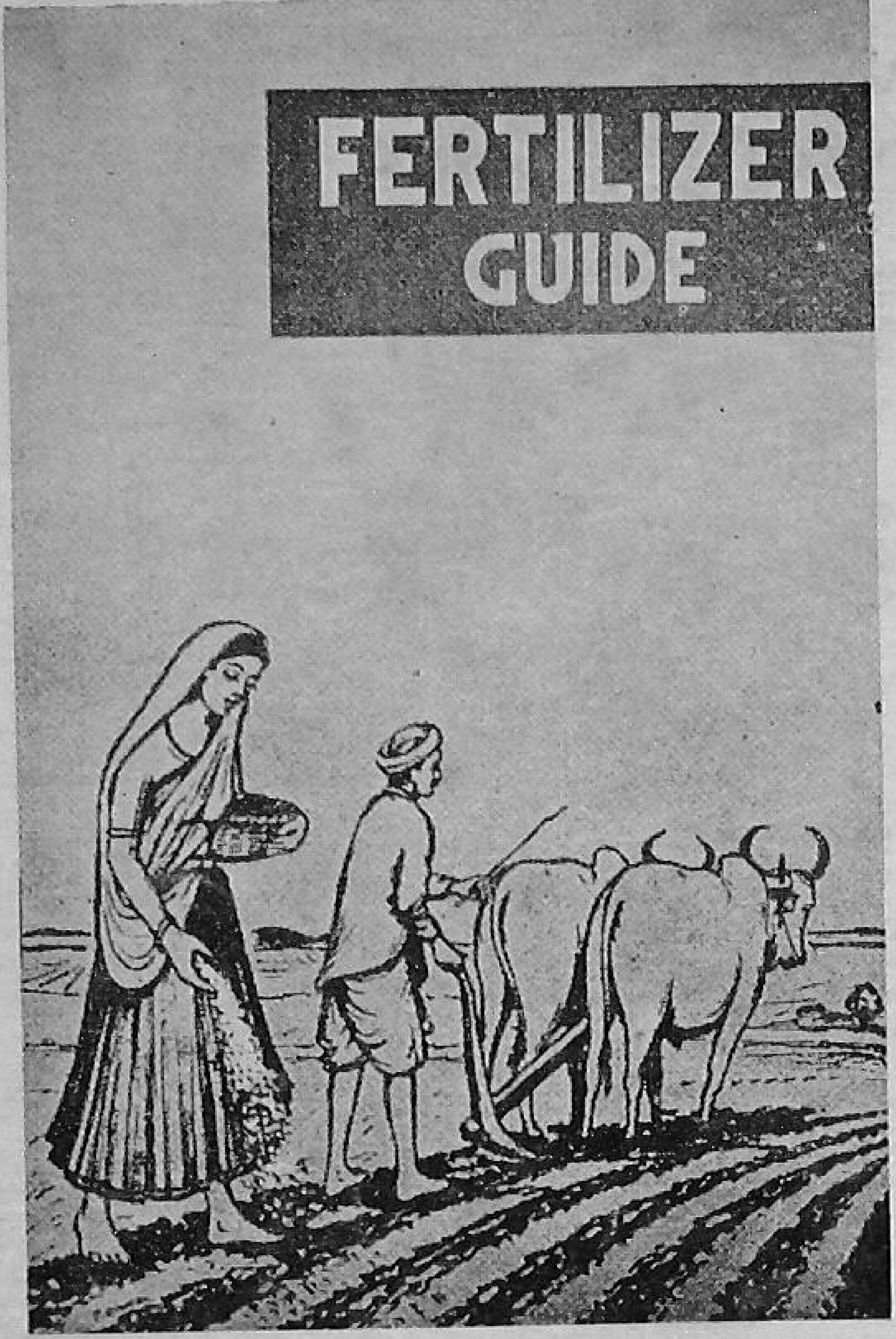
Glass bowls, water and strips of bamboo or wood



An empty clay jug



The best method of learning a thing is by doing it. *Gram Sevak* trainees of Ranchi Extension Training Centre learn cooperation by running a cooperative store. Here a trainee, who is incharge of the store for the day, is seen selling articles of every day use to one of his colleagues.



EXTENSION
PAMPHLETS

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